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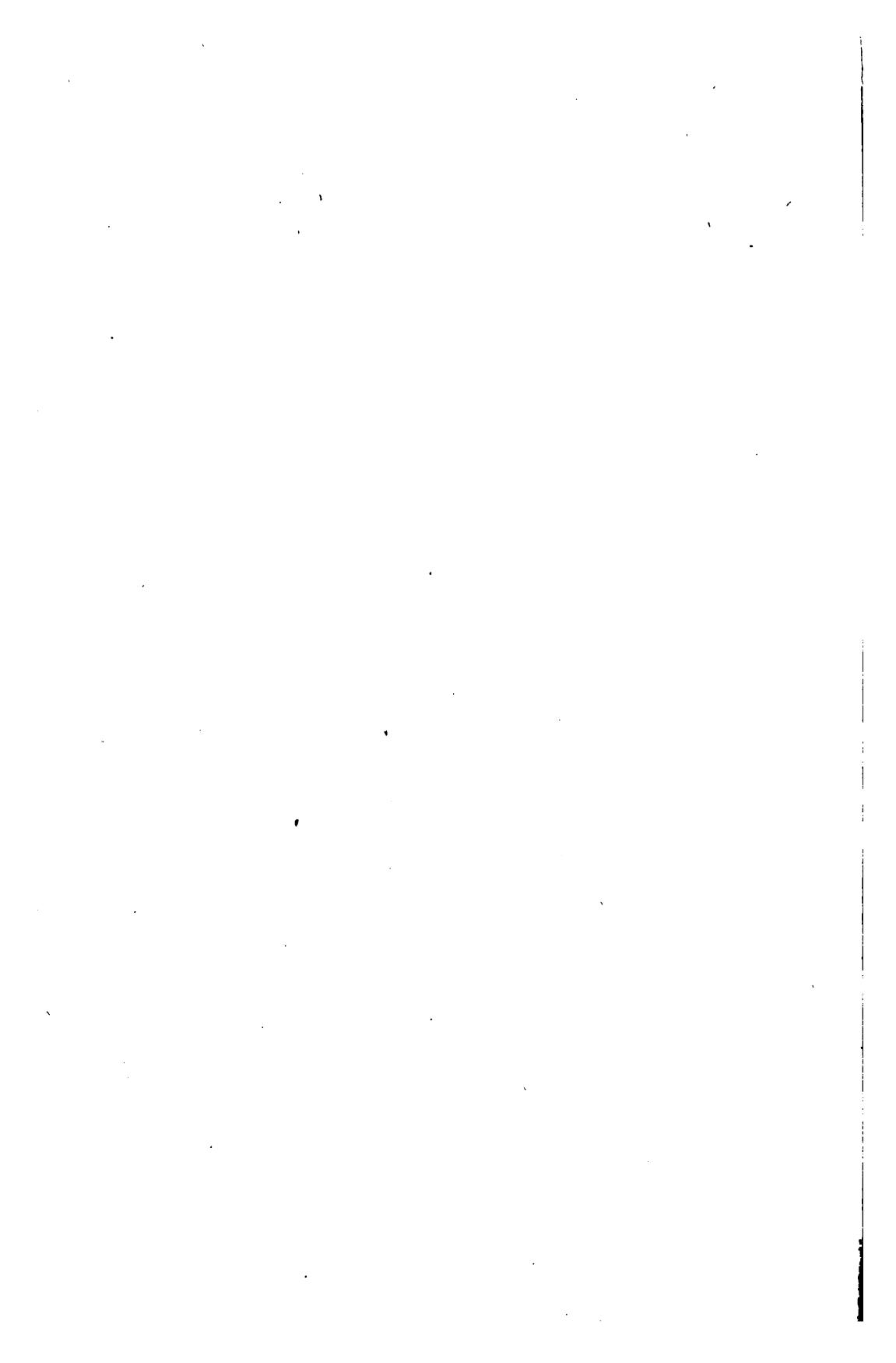
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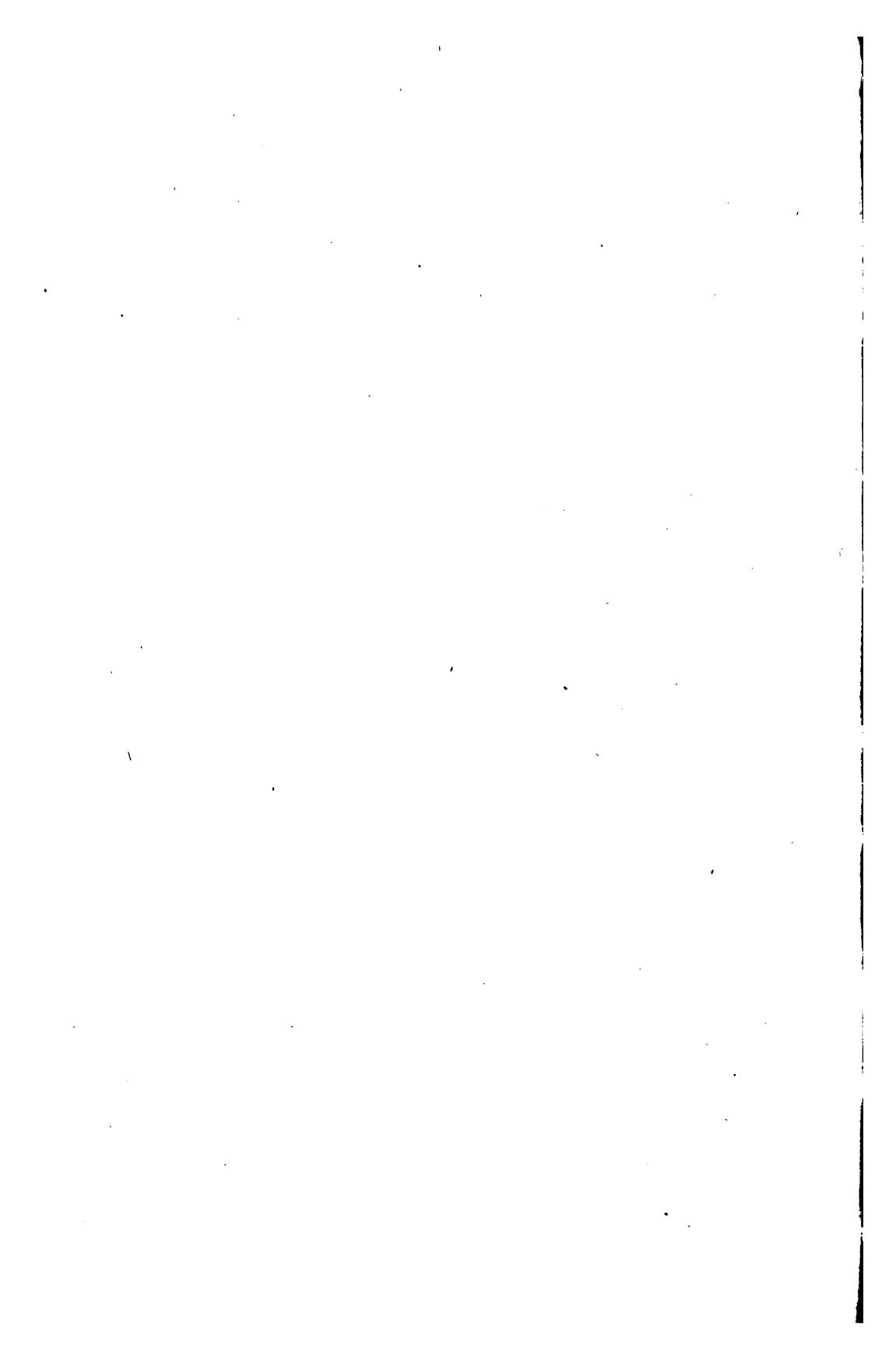
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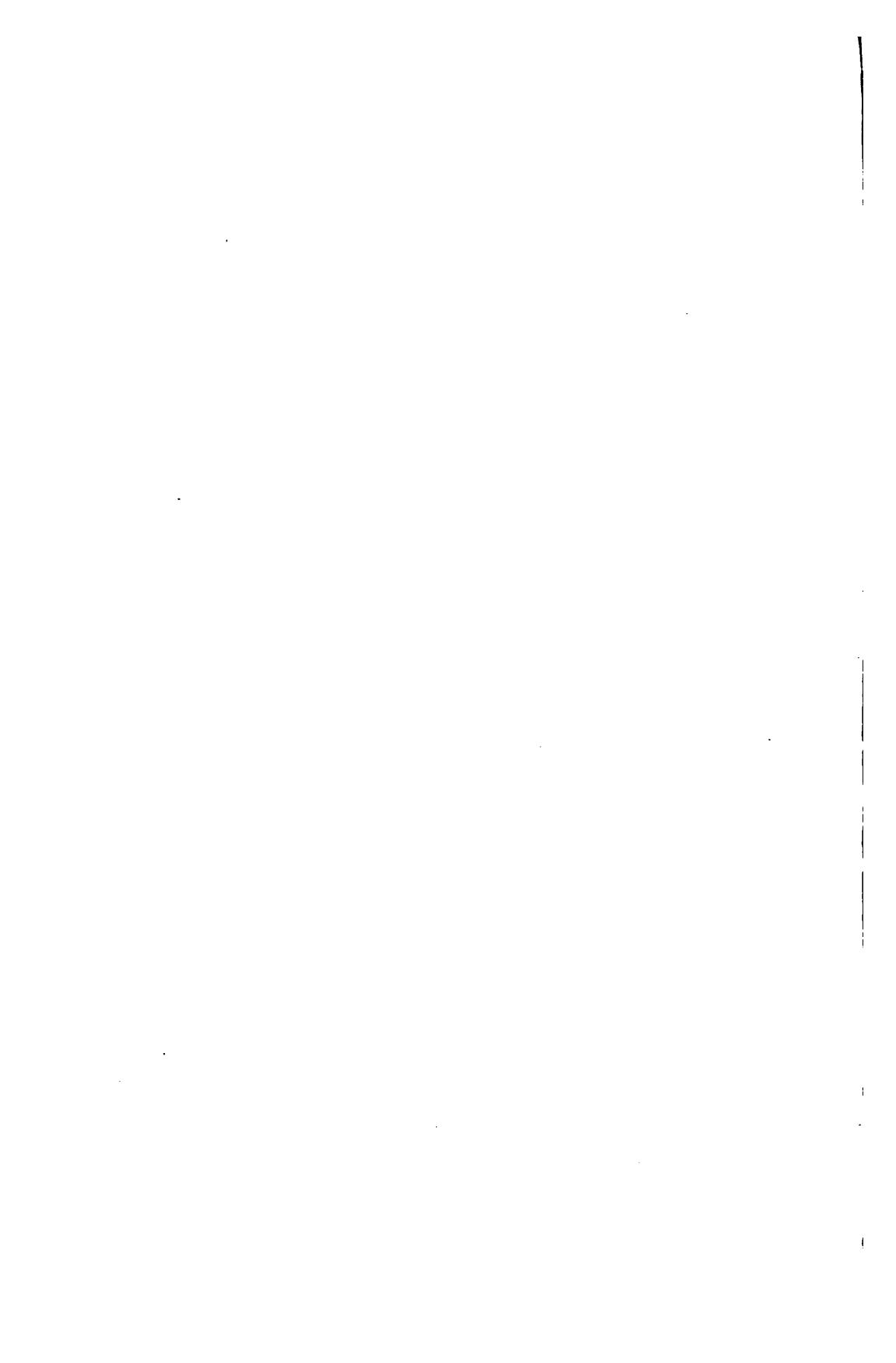








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**THE GREAT
DESERTS AND FORESTS
OF NORTH AMERICA**



THE GREAT DESERTS AND FORESTS OF NORTH AMERICA

BY

PAUL FOUNTAIN

WITH A PREFACE BY W. H. HUDSON, F.Z.S.
Author of "The Naturalist in La Plata," etc.

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P R E F A C E

HAVING read the proof-sheets of this work, I am glad to comply with the publishers' request that I should write a preface. In doing so I but make the author a moderate return for the pleasure I have had in following him in his wanderings in some of the waste and desert places of the earth. That rude, unspoilt nature he tells of best pleases me, and I have no doubt that it best pleases very many of us. Being what we are, children of the desert in our distant origin, it is but natural that the artificial conditions in which we are for the most time constrained to exist should pall upon us—that a breath from a fresher, more open world should at all times be grateful. It is true that the best reading is but a sorry substitute for the thing itself; nevertheless it is a substitute—there is unfortunately no other known to me; and I can honestly say that for a long time I have not found a better than this same book. That it is not by a literary man, a word-painter by vocation, is all in its favour; there is no mistaking the feeling which drew its author by rough ways into remote and uninhabited places; while in his simple, direct style he is well able to bring many a striking scene before our mental vision.

The author does not claim to be in any sense a scientific naturalist, and that, too, may be an advantage to the general reader. When a man has a good deal of science he is apt to muffle himself up in it, even to the concealment of his natural features, so that we do not know whether he is one of us or not, or to what tribe he belongs. But there is a large amount of Natural

History in the work; it is in fact nearly all taken up with the subjects of wild life, and the author appears to think—or at all events that is the impression left on my mind—that these observations recorded by him give to the work whatever value it may possess. On this point I do not wholly agree with him. Since his notes were made on the habits of many of the most interesting animals of North America, a great mass of literature on the subject has been accumulating, and we cannot now expect that any book will add greatly to our knowledge. It is the freshness of Mr. Fountain's observations which makes them so attractive. They are entirely his own, and to my mind it is the author's personality which gives this book its chief interest and value. The vanished bison, the puma and grizzly bear, the moose and wolf and coyote, the mountain beaver and prairie marmot, with many another fascinating beast; and many a bird, from the golden eagle, with its huge nest in a solitary tree of the prairie, described in the second chapter, to the road-runner in the last—the quaint, swift-footed ground cuckoo of the arid country, that runs before the traveller and picks the parasites from the backs of his grateful mules;—these all pass before us as we read, a procession of noble and beautiful forms, and they hold our attention, not so much because of the additions made to our knowledge of their histories, as because we see them alive and active in their wild haunts through the author's sympathetic eyes. We like him all the better because he does not delight in shedding their blood, and is not ambitious for "trophies." This rare moderation, where it was not looked for, comes as a distinct relief after the many crimson books which our many Nimrods and exterminators by trade have recently been showering upon us.

It will perhaps be said of what is here written that it is less a preface than an appreciation. It may be so. I do not know the author, nor had I anything but what was gathered from this volume to go upon, excepting

a few words about the book which I will quote, in which he says that the notes of his observations range over a period of thirty-five years. "During this period," he writes, "vast changes have taken place in all parts of America, more especially in the United States. Large forests have been swept away, huge railways constructed, cities have grown almost past conception, and thousands of square miles of plains and prairies broken up for cultivation. It will be as well to remember this when reading some of my earlier notes, which were made in wildernesses that are wildernesses no longer. I may also say that the observations here recorded were made for my own amusement and instruction in the first place, with no intention of publishing, and at such odd times as I could spare from my other pursuits."

In this volume he speaks incidentally on several occasions of his South American and Mexican experiences, and of his intention to follow with a book on that subject. I for one shall be glad to read it, and will here venture to express the hope that it will contain somewhat more of human interest, and that Mr. Fountain will be less chary of his personal adventures, and his impressions of men—red, white, and black.

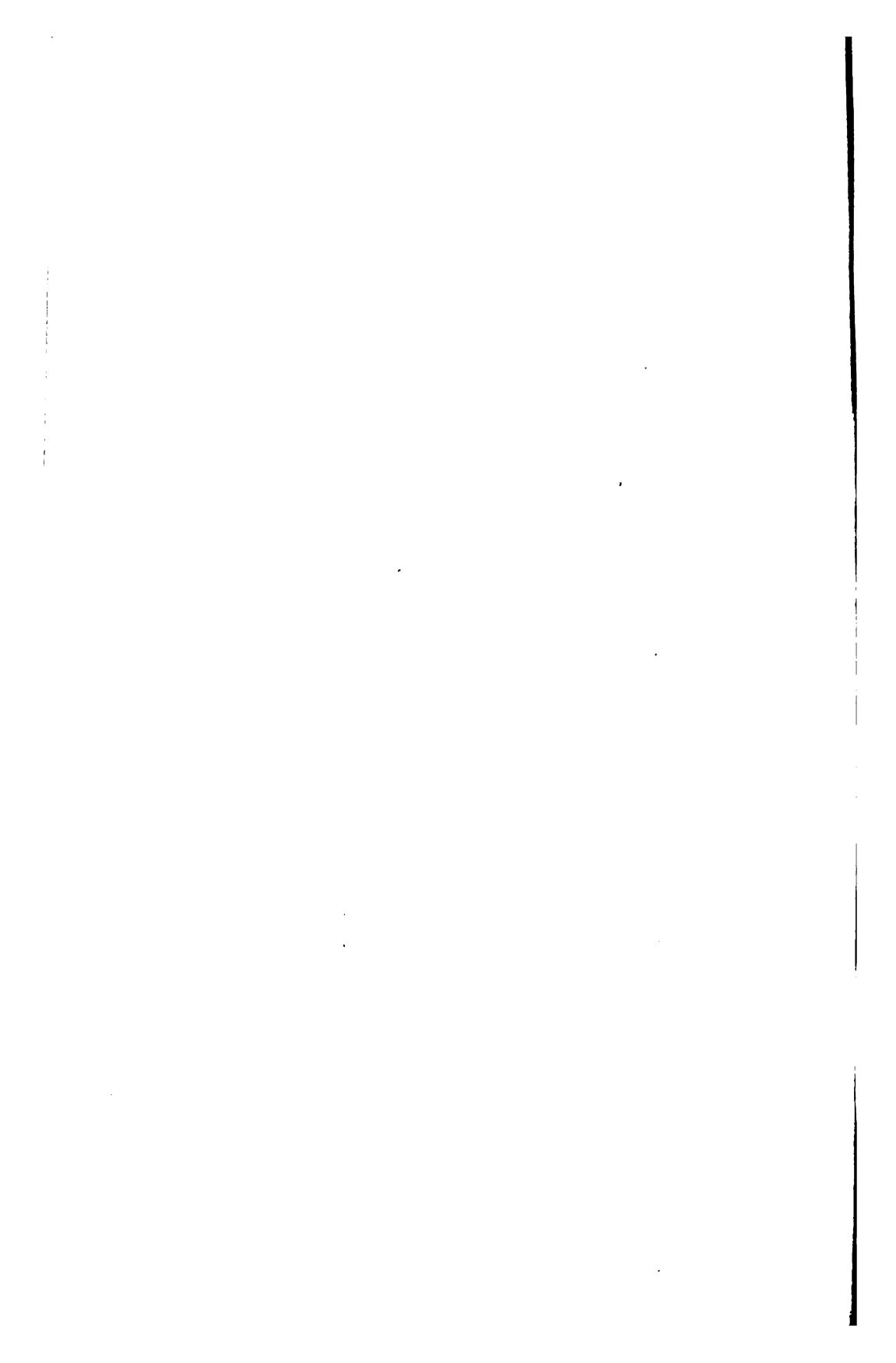
W. H. HUDSON.

LONDON, 1901.



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THE GREAT DESERTS AND FORESTS OF NORTH AMERICA

CHAPTER I

THE PRAIRIES OF THE MISSISSIPPI VALLEY

NONE of the pictures of the American prairies which I have seen convey to the eye a correct idea of the actual appearance of the country. The Mississippi prairies present the appearance of a series of huge oceanic billows, which have suddenly become petrified and covered with verdure; or the undulations of the ground are like enormous furrows ploughed in past ages by a race of giants. Travelling over this ground, a man is constantly ascending and descending these undulations, which are generally from seventy to eighty yards in extent, sometimes extending to two or three hundred yards; so that you may travel scores, and sometimes, perhaps, hundreds, of miles, and never be able to see half a mile ahead of you or on either hand. This is the general aspect of the prairies of the Mississippi Valley; but of course the ground varies in places. The idea conveyed by most pictures and many writers, that a man or a waggon can be seen many miles off, and long before the traveller comes up to it, is erroneous, or at least very exceptional. A traveller follows a waggon he desires to overtake by the tracks, and not by sight; and to be able to judge how recently these tracks were made is an important item of knowledge to the wayfarer. The ground is admirably

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suited to concealment, and in the old days of Indian troubles those "varmints" used often to sneak along the hollows between the furrows and surprise unsuspecting travellers. The elevations of the ground, and the hollows between them, are of almost equal height and depth. The streams of water wash away great quantities of the soil, so that they are almost always muddy, and the water left at rest awhile in a vessel precipitates much sediment.

The herbage on these prairies is exceedingly rich, as might be surmised from the enormous herds of bison which formerly found a subsistence upon them; herds which, alas! have passed away for ever. As it is of the utmost importance to describe correctly the habitats of wild animals, I must delay a little to particularise the productions of these prairies, hackneyed though the subject may seem. Roughly speaking, the prairies occupy the whole of the centre of the United States, though there is considerable diversity in their general appearance; and the vast plain is broken, almost in its very heart, by the important mountain range of the Ozarks—a system occupying an area as large as that of Ireland. I consider that the prairies, properly so termed, of the United States have an area of more than a million square miles. Mexico and Canada come but little, if at all, behind the States in their prairie area; but we will confine our attention just now to the prairies of the Mississippi Valley, because it was therein that the bisons found their favourite haunts. The northern parts of these prairies, about the upper courses of the Mississippi and Illinois, have bushes and scattered trees. Here may be found the wild grape in abundance, with great variety of bright wild flowers. Wild flowers, indeed, are abundant in all parts of the prairie at the proper season, and form one of its most striking beauties. As we come south from St. Louis, the prairie rapidly becomes more arid in appearance, and assumes that "rolling" or furrowed aspect

which I have endeavoured to describe. In the summer and winter the grass of this region becomes scorched into the dryest of hay, and the ground is as hard as iron. Sometimes the ground cracks into crevices, but not to the extent observed in other plains in this and other countries. Animal life is then very scarce, except in its lowest forms, as insects, &c. There is no water except in the tributary streams of the great rivers, and the traveller may ride for days without seeing a four-footed animal of any kind. Hawks, however, are almost always hovering about. They seem to follow the traveller for days, are very bold, and will approach the camping-place readily for scraps of meat.

The smaller birds are scarce at all times. Talking to a gentleman who takes an interest in natural history, he informed me that he once rode from Little Rock on the Arkansas River to Fort Holmes, and thence to Kansas City, a distance in all of fully 650 miles, and never saw a small bird. It is remarkable that there is a great absence of Fringillidæ (finches, &c.) in most, if not all, of the world's great open plains. The gentleman referred to met with hawks and other birds of prey, which are supposed to subsist largely on small birds, in all parts of the prairie, but nowhere saw a single small bird until he reached Kansas, where he found finches breeding in the gardens and enclosures of the homesteads. The journey took place in 1873.

I can say, of my own knowledge, that the great plains of the Punjab and Sinde, in India, including the neighbourhood of Peshawur and the Khyber Pass, are destitute of Fringillidæ; though members of the class may be found breeding about houses where there are shrubs or trees. I have even known them breed on creepers at the doorway, so that it was impossible to enter or leave the house without passing within a yard of the nest.¹

¹ My experience of India is very limited, extending to only a few months, and being confined to the North-West Provinces.

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I am satisfied that, in America, finches and other small Passeres follow man in his migrations. Let a "city" spring up on the prairie, though it consist of but two or three huts and a store, there will the small birds come and breed, though you look for them in vain in the open country. Nor do they ever seem to wander far from the habitation of man. They visit the fields and gardens he encloses to feed, but they do not go out on to the prairies. It must be understood that these remarks apply to the prairies only. It is undeniable that vast flocks of small birds migrate from one part of America to another, and during their journeys pass over extensive tracts of uncultivated land. But of this I shall have more to say by-and-by.

Roaming still farther south, we come to a different kind of prairie. Here the herbage is more generally bush, and small lakes and ponds are frequently found. These are mainly collections of rain-water, and are not fed or exhausted by streams. Hundreds of them dry up entirely, or become tracts of mud, in the hot summer months. They used to be much frequented by the bison; indeed, here that noble beast could always be found.

Volumes have been written in description of the bison and its pursuits, but I must add my quota; for it was the most prominent and interesting object of the prairies, if not of the American continent, and its wanton extinction is a national crime, which can never be forgiven the American people by the naturalist and the hunter.

I will forego a lengthy description of the animal, which is probably well known to all who are likely to take up a work of this kind. I have never heard an American, educated or uneducated, call the animal otherwise than a "buffalo." It is, however, decidedly not a buffalo; and, in spite of all that has been written to the

contrary, and by good writers too, I am sure it is a mere variety of the European bison, and not entitled to be accounted a distinct species. The points in which the two animals differ, and on which reliance is placed to prove their radical distinction, are: that the European bison is furnished with heavier hind-quarters and shorter horns than the American animal; that the former haunts forests, while the latter is confined to prairies; and while the American bison eats grass only, the European largely consumes leaves.

These assertions are largely incorrect, and the conclusions derived from them erroneous. The habitats of the European and American bisons were originally similar. The former wandered all over Europe, with the exception of the mountainous districts of Norway, Switzerland, and Spain and France. The steppes of Russia and plains of Hungary abounded with them, as did the low lands of Germany, France, and Spain. Some gentlemen have challenged the assertion that the bison ever inhabited the plains of Russia, but it is certainly a fact that their remains have been found there in large quantities. It is the overwhelming presence of man in the plains that has driven the beast to the security of the forests and fastnesses of the Caucasus, the only places in Europe where they are now found in a truly wild state. In the royal forest of Lithuania the number now remaining in strict preservation appears to be about eight hundred. In the Caucasus the number cannot be ascertained, but certainly does not exceed a few thousand, and is daily becoming fewer.

Now, in America precisely the same causes which drove the European bison out of the plains has driven his Transatlantic cousin into them, namely, the encroachment of man. Formerly the *Bos Americanus* practically wandered over the whole of the northern continent. It was found in Canada as far north as the Arctic Circle, and southward as far as the centre, or farther, of Mexico.

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The Rocky Mountains offered a barrier which it could not pass: that alone kept it from the extreme west. The writings of Hennepin (1679) and other old authors prove conclusively that in their days the bison was abundant in the forests of the Atlantic seaboard, and the woods of the north, as well as the eastern plains. As man occupied these regions the bison was gradually driven into the unoccupied prairies. As to its food, I know that it would eat almost any species of herbage it found in the prairies, and no doubt would nibble the tender and succulent leaves when an inhabitant of the forests.

As to the structural differences mentioned above, they are really too trifling to bear much weight. A matter of much more importance, if correct, is the assertion of a naturalist of some experience that the aurochs (European bison), in common with the wild bulls of Europe and Asia, has but fourteen pairs of ribs. I think that this may be a mistake. At all events, I know that the American bison has fifteen pairs. But even this difference is not sufficient to constitute a distinct species. To the eye there is scarcely a perceptible difference between the two animals. The general habits of both are alike. Bisons form small droves, each under the leadership of an old bull, who suffers no rivals. These droves go together in vast herds, each drove keeping jealously separate. The interval between the droves is small, generally seventy or eighty yards. Actually there was but one vast herd of bison in America, with certain detachments from it. In other words, all the bison in America were in touch with each other. I do not know if this remarkable fact has been noted before; but it is certainly true. The herd was constantly on the move, migrating from one district to another, otherwise they could not have found sufficient food to maintain them; for it is no exaggeration to assert that the prairies swarmed with them.

A few weeks after the breaking out of the Civil War a party of scouts riding through the State of Missouri passed through the main herd of bison. It was eighty miles long by fifty broad; and it was ascertained by actual counting, roughly calculated, it is true, yet still by actual computation, that there were at least 1200 head per square mile. This gives the enormous total of 4,800,000 head existing as recently as 1861. But there were, besides, detached parties in other parts of the United States, and in Canada. These detached droves I believe to ultimately have rejoined the main herd, and been replaced by other droves. I mean that the bison actually frequently wandered or migrated as far as from the Mississippi Valley to far within the borders of Canada.

Odd bulls were frequently met with all over the regions inhabited by the herds. These were either young, or very old animals, ejected from the droves by the jealousy of bulls in their prime. During every breeding season combats between the bulls were general, and always ended in the driving out, and frequently in the death, of the weaker animals. Doves sometimes seemed to linger in a district, probably tempted by the abundance of food, and did not take part in the general annual migration. So that it was always more or less probable that small droves or odd animals might be found in any part of the districts they most frequented.

The herd was subject to sudden frights and panics. These were most frequently the result of prairie fires, which caused the bison extreme terror, or by the hunters' drives. At such times the herd rushed together until it became wedged into a compact mass, which fled wildly before the cause of its fright. If a river lay in its line of flight, they would dash into it and swim across, but many would be drowned, simply because they had not room to swim, and were borne down by the weight of their companions.

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To return to their numbers. Calculation must, of course, depend largely on conjecture, but if there were five million head in 1861—and I have reason to be sure that that is not an exaggerated estimation—it is probable that there were at least ten million at the commencement of the century. Possibly the herd was never stronger than this; for I am of opinion that prior to about the year 1800 the hunters and Indians did not destroy a greater number (wasteful as they were) than was annually reproduced. If we take their feeding ground at two million square miles (an enormous area), this would give five beasts per square mile—a good average after deducting rocky and barren land, and making allowance for the facts that for a great part of the year much of the prairie was parched dry; and also that other game had to be supported.

The bison had few enemies but man. Wolves are said to have destroyed many. I doubt it. Wolves would not dare to approach the herds, and weak and sickly individuals were probably the only ones that ever fell a prey to them. The same may be said of bears. Bears are not found on the prairies except near the Rocky range, and I am of opinion that they rarely, if ever, attacked the bison. A full-grown bison was probably more than a match for any wild beast found on the American continent. No authentic account of either bears, wolves, or pumas overcoming bison ever came under my notice, though I made diligent inquiry for such.

The bison was not a fierce animal in spite of the wicked look of its eye. It would, when wounded, defend itself bravely against dogs and other animals, but I never heard of it turning on the hunter. Such lives as were lost in its pursuit were the result of horses falling, riding headlong into half-hidden ravines, and similar accidents. The hunting of bison was scarcely good sport, in the proper sense of the word. The poor brute was so stupid,

and withal so clumsy, that, once found, its slaughter was a foregone certainty. I need not dwell on the methods of hunting it, which have been described by so many writers. It was destroyed wholesale by the Indians, and sometimes by the white hunters, by being driven into pitfalls. An old Indian asserted that he had seen a thousand head killed in a single day in this way. A common way of slaying them was to ride among the herds by the side of the beasts, and shoot bison after bison, as long as ammunition or arrows lasted. The latter weapon was generally used by the Indians, who considered powder and ball too precious to be used against such an easily destroyed prey. A powerfully limbed Indian would ride so close up to the bison that his arrow was buried to the feather in the poor brute, killing it as surely and quickly as a bullet. Indeed, I have heard it asserted that bison were often killed with a long knife, the hunter ranging his horse side by side with the beast, and then severing the spine by a well-directed blow. American dragoons often killed them with their revolvers, which are heavy weapons carrying the charge of a carbine.

The railway was really the most deadly enemy the bison ever had. It opened up the prairie country to anybody who could fire a gun, and enabled him to transport his spoils to towns where he could coin it into the "almighty dollar." The Pacific line ran right through the herd, and it became quite a common occurrence for the train to run among them, killing hundreds, and frequently being itself turned off the track, with occasional loss of life among the passengers. From the period of the Civil War, about which time the Pacific Central Railway was completed, the destruction of the herd became very rapid. In ten years it was reduced more than one-half; its migrations were seriously interfered with, and many scattered droves driven into far districts, where they were destroyed in detail by the

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inhabitants. The final catastrophe was a shocking and wicked act. It was reported in the newspapers of the day that the remnant of the herd numbered 10,000, and that it was practically wiped out at one shooting. It really numbered nearly 100,000, and its destruction is almost too disgusting for description. The poor brutes, who had at length learned to fear the crack of the rifle, were driven into a more or less compact mass, and surrounded by hundreds of so-called hunters (drinking-saloon loafers and similar blackguards, for the most part), and shot down wholesale against time. The firing resembled that of a fierce battle. Many of the men boasted that they had fired a thousand shots, all the ammunition they had brought on pack-horses. These horses were made to take part in skinning the carcasses, which was wastefully done. Incision being made round the skin, excluding the limbs, the pelt was fastened with cords to the saddle of the horse, which being whipped up, tore it roughly off the back and flank. These roughly stripped hides were sold wholesale in the adjoining townships for a twentieth or thirtieth of the price of a properly prepared "buffalo-robe."

Very few of the bison escaped. Occasional herds, numbering from a dozen to a hundred head, were from time to time discovered wandering in parts of the country they had never previously been known to visit, doubtless seeking, poor brutes, for a place of rest, which they failed to find. Most of them were killed. The United States Government preserved (as they still do), a few in the Yellowstone National Park, a district about equal in size to Yorkshire; but they do not prosper or increase in number. The Yellowstone region was never haunted by them in the days of their freedom; and doubtless they are still harried by poachers. A very few found protection, in captivity of course, by private persons, but as a wild animal the American bison is as dead as a door-nail; and if all those now in existence were col-

lected and protected never so strictly, they are too few in number to ever replenish the prairies.

The bison bull would pair freely with the domestic cow, and its strain may be traced on many farms in all the Southern States. I do not know, however, that any advantages accrued from the cross-breeding. The hybrids seemed to me to inherit their sires' slenderness of quarters, and the cows were said to give a paucity of milk. They were described, however, as strong and useful animals at the plough and in waggons. Oxen are much used for these purposes in Kentucky and other States.

I offer an apology for having so much to say about an animal that has been so exhaustively described by abler pens, but I felt that I could not pass altogether in silence a creature that has held such an important position in the American wilds, and which must be ever enshrined in a naturalist's memory on account of its sudden and complete extermination.

To return to the prairies. I am sorry that I am not qualified to speak of their geological aspect. This was particularly the case when I had the best opportunity of examining them. I can only state that in my opinion what are locally known as the "rolling prairies," those I have particularly described above, do not show that they have been subjected to the action of water—at all events in recent ages. But that part of them which is situated at the confluences of rivers and the delta of the Mississippi, with some tracts along the course of the streams, are undoubtedly alluvial, and the vegetation is different in these parts to that of the "rolling" and "bushy" prairies. The grass is strong, and tall and sedge-like. These are the flattest parts of the prairie, and those which afford the greatest range of vision, except where the ground rises into hills; but considerable misapprehension generally exists as to the "interminable view" these stretches of flat country afford. Like inexperienced persons

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at sea, travellers on the prairies are apt to think that they can see much farther around them than is really the case. In cases of very flat country there is almost always a haze on the horizon which greatly limits the range of vision ; and it will doubtless surprise most persons to learn that there are often fogs on the prairies as dense as those met with on the sea. To get a really extensive view of the prairies we must ascend the mountains, and there are certain points in the Ozark Mountains which afford magnificent, and indeed truly wonderful, views of these vast plains. I cannot refrain pausing to remark my surprise that the Ozarks are not more frequented by European visitors. The journey, it is true, is a long and laborious one, to the very heart of the States ; but it well repays the labour to explore this splendid and most picturesque range. I shall, doubtless, hereafter devote a chapter to these mountains.

Notwithstanding the parched condition of most of the prairie during the summer and autumn months, I believe the soil is almost everywhere rich. It is exceedingly so in the alluvial flats, in some parts of which there is a rich black mould at least thirty feet thick. Where I have had the opportunity of examining excavations, there have been revealed the bones of many extinct animals, amongst which I seldom failed to find those of the bison abundantly, particularly in the neighbourhood of New Orleans and in Kentucky, showing that that most interesting animal has been an inhabitant of North America for thousands of years. I never heard of fossil remains of the bison north of the great lakes. This tends to strengthen my opinion that the bison in Canada were migrants from the great herd of the Mississippi valley, and not stationary inhabitants of that country.

Several species of deer are inhabitants of the prairie. I am afraid their numbers are sadly diminished of late.

Formerly they were numerous, but not in anything like the vast numbers of the bison. There may also be occasionally met an odd puma or two ; but these latter animals, with bears, and some smaller beasts of prey, prefer to lurk in the rocky, broken tracts of country and amongst the woods. So this is not the place to describe their habits. Wolves are more numerous in the prairies, and mischievous brutes they are. Man runs no danger from them—that is, no direct danger ; but are you a traveller on the prairies ? Then look well to your tethered or hobbled horses at night, and be sure they are kept close to the camp-fire, or you may chance to have them sadly mangled, if not pulled down, before morning. Possibly you travel with a waggon, the safest and most comfortable way, since it affords you the comforts of a moving home ; but if you chance to pitch a tent, take care to leave a guard near it if you desire to take an evening ramble in search of a shot, or to try a hook in the neighbouring river. I have known these wretched brutes completely wreck the contents of a tent in the temporary absence of its owner. All food is gobbed down in a twinkling ; leather articles, such as belts and harness, afford an acceptable second course, while a pair of boots is a *bonne bouche* that seems to be particularly sought of the wolf gourmand. If he leaves you so much as the soles, bless yourself, as you will most likely heartily cuss the depredator. A good dog is useful as a guard, but he must be a good one, for a dog is about the only creature that the American wolf will fight with, and it is only a first-class one that is a match for it.

As there is a difference of opinion regarding the species of the bison, whether or not it is a mere variety of the European species, so there is some difference among authorities about the American wolf. Some insist that it is a distinct species, but most good naturalists in the States admit that it is identical with

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the European species. When the same kind of animal is met with in widely separated districts of the same country, a naturalist expects to meet with some modification of the creature; in other words, a "variety," which is a different thing to a species. Much more is this the case when different quarters of the world, separated by a great geographical space, are in question. I should expect the European wolf transported to the American continent to display considerable difference from his home relative when a few centuries had elapsed. But though the wolf has inhabited America for many thousands of years, probably tens of thousands of years, I doubt much whether any person except an expert would be able to point out its difference from the European variety. Those who desire to establish a difference say that the American wolf is more gaunt than the European, and of a darker colour. But as a fact, the American wolf differs much in different districts, not only in colour, but in size and contour. The latter, I suspect, depends much on the abundance, or otherwise, of food. It is but natural that a well-fed wolf should be less gaunt than a half-starved one.

In colour, wolves differ as much in Europe as they do in America. Albinoes are quite common in some parts of the Southern States, while in Maine and Florida and other parts, black wolves are frequently met with. Again, in some districts wolves are more rufous than in others. But these variations in colour are purely accidental, and prove nothing. Such variations are quite common among many species of wild animals, as most persons know. I may remark, however, that I never saw or heard of any variation of colour in bisons. I believe there is no record of an albino or a black bison.

It is in disposition more than in anything else that the American wolf differs from the European. I do not

say in *habit*, mind, in which the two animals agree perfectly; but while the European wolf often shows courage enough to attack a man, the American animal never does that. The nearest approach to an attack on man that I ever heard of was in the case of a cowboy in Missouri in 1878. He had lost a colt by wolves, and set traps and poisoned meat to destroy the brutes. A wolf was caught in one of the steel traps. Its leg was broken and it appeared to have bled to death when found, for it lay passive. No sooner did the cowboy, however, stoop to take it from the trap than it flew at his throat. The man, a very plucky fellow, did not release his hold, but, kneeling on the brute, broke its neck by sheer strength of arm. He received a severe bite on the shoulder, which vexed him a great deal, as a wolf-bite is often very rancorous, and seldom heals rapidly, especially in the case of gentlemen who consume as much whisky as do cowboys.

All the large mammals on the American continent are rapidly becoming extinct, the wolf among them. He is such a venomous, destructive brute, that he has provoked especial measures to hasten his extirpation, amongst which traps and poison hold a foremost place. But he is as cunning as sin, and has been seen to carry a piece of poisoned meat a mile or farther, frequently putting it down to smell around it, and ultimately abandoning it, evidently not satisfied that all was well. As to traps, set them warily if you wish to capture your wolf. He is down to the trick of all traps that lie open—palpable. A cage-trap with a falling door was set in the prairie where wolves abounded. The beggar tore out the back of the trap, and carried off the meat-bait scatheless. Steel traps, like those used by gamekeepers to catch foxes, but larger and stronger, are the best; but they must be well concealed, and attached by strong chains to beams of wood buried in the earth. The cowboys and the farmers also use

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some cruel means of destroying them, which I shall not describe, as I cannot approve of such means of destruction; and poison is an utter abomination. It destroys innocent creatures as well as troublesome ones, and is responsible for denuding whole districts in the States of many animals which the naturalist sees perish with bitter regret.

Formerly packs of wolves, five or six hundred strong, roamed about the prairies. The last thirty years, however, has seen them quite cleared out of some States, and reduced to stragglers in others. Odd ones, pairs, threes or fours, and small packs of twenty to seventy, or more in the wilder parts of the country, are met with. When they hunt deer or other animals, they always assemble in packs; but odd ones and pairs will attack sheep, to which animal they are terribly destructive. They appear to drink blood; for if they get the chance they will kill many more sheep than they can consume. On the prairies, I think, they often suffer from lack of prey. I have known them kill and devour coyotes (a smaller species of wolf) and dogs. I don't think they will eat birds. No instance of their robbing a hen-roost ever came under my notice; but they will tackle and overcome a porcupine, and they will rob a vulture of the most loathsome carrion. They pull down deer, but some deer sell their lives very dearly. Then the wolf turns cannibal, and eats his slain and disabled fellows. I have said that the wolf will eat a coyote: he will not, however, touch the carcass of a fox. When bull bison fight, and one kills or much injures the other, then the wolves have a feast indeed. They may, perhaps, pull down very old bison who cannot defend themselves, because their horns decay and chip away with age; but as to touching an able bison or a calf, I will not believe they ever attempted it. In the latter case the cow bison would be a very demon amongst them; for she is the fondest of mothers, and never lets her calf out of her

sight. These remarks, of course, apply to when bison were. Alas! now they are not.

The same sort of feeling that exists between a policeman and a member of the rascality seems to subsist between the dog and the wolf. They never meet without a desire to be at each other's throats. The dog must be strong and courageous to hold his own. If there is more than one wolf, ten to one he will be ripped to pieces. In my opinion the mastiff and the bull-dog are the only dogs that are, single-handed, a match for the American wolf. Neither of these dogs is possessed of sufficient speed to overtake a wolf on the run; but if the wolf is not intimidated by the presence of man he will not decline the combat. They sometimes fight amongst themselves, especially when jealousy is the exciting cause. In all other respects the wolf is a most cowardly and skulking creature. It does not appear to have many natural enemies, but I have reason to believe that the larger snakes, including the rattlesnake, prey on it, occasionally at least;¹ and I may add that I have known wolves return this doubtful compliment, and devour snakes as well as other reptiles. Indeed a starving wolf will devour anything that it can make its teeth meet in, and habitually eats grass like a dog. Indeed it is a true dog, and undoubtedly the progenitor of the domestic dog, yet it seems untamable. Several persons I wot of have attempted to bring up the cubs and domesticate them, but without success. In two cases the cubs took themselves off before they were full grown, and in another case the little brute proved so vicious and mischievous that it had to be destroyed. In yet another case the cub was kept until it was full grown; but it destroyed every dog on the farm. It never showed any affection for its master or his family; the children were

¹ This refers to small cubs only. There is no snake in the States that could swallow a full-grown wolf.

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afraid of it; and though it did not run away, it was never released from its chain but it did some mischief. It bit several of the negroes, and ultimately had to be shot, as it became a terror to the place. I never had the opportunity of trying to tame a wolf cub myself, but I have had some success that way with a coyote cub; an animal which I now proceed to describe.

The coyote is a handsome little animal, but it is a true wolf. A stranger seldom sees it for the first time but he exclaims, "Look! There is a fox." This error is induced by the length of the animal's hair, its bushy tail, sharp-looking snout, and its size, which is very much less than that of the common wolf. It is a prolific animal, and is, or was down to a recent date, abundant over nearly the whole of North America. On the prairies it is far more frequently met with than the wolf. Like the wolf, it will eat almost anything, including raw hide and leather; but it is not destructive to sheep or other domestic animals. It eats all sorts of birds readily, and is expert at catching them. Lurking amongst the thick grass and sedge by the side of rivers and pools, it springs upon ducks and pelicans and other waterfowl, and captures many; and it also devours such small fry as rats, musquashes, and lizards. Some American naturalists insist that the wolf does the same, but I have never seen it touch a bird. Many dogs, also, will not so much as look at the flesh or bones of any kind of fowl, even those which are readily trained to catch birds. The wolf is a great enemy to the coyote. The former runs the latter down with ease, but he does not always gain the victory without a sharp fight; for the coyote is courageous. But the contest always ends in one way. The wolf is the stronger and fiercer animal, and, moreover, generally has the assistance of a companion or two. An Indian told me that he once saw a pack of wolves chase a pack of coyotes, many of which they killed. The habits of the coyote are similar to those of the wolf, but it goes in

larger packs. Thirty years ago it was not an uncommon sight on the prairies to see packs of three or four hundred. Most packs were a hundred or a hundred and fifty strong; but many odd animals were always to be met with. Alligators destroy a goodly number when they are foraging on the river banks, and serpents also take their toll of the cubs.

A young one brought to me by an Indian in the Indian Territory lived nine months and became full grown. It was supposed to be not more than a month old when I became its owner. It grew up a gentle and affectionate little animal, having most of the winning ways of a pet dog. It was never mischievous, and never showed a desire to wander away. It avoided dogs and abhorred cats, and was disposed to be cross-tempered with children. It neither barked nor growled while in my possession, and seldom howled. Wild coyotes and wolves howl frequently, and are sometimes an abominable nuisance round the camping-place, but I have never heard either bark. I found my pet dead one morning from no apparent cause. A post-mortem examination, however, showed that it had been severely injured, most likely from a kick. It would eat bread and vegetables freely, and was exceedingly fond of anything sweet to the taste. When bothered by flies, it would snap at them like a dog. It took to the water readily, but disliked being washed.

Like the wolf, coyotes will sometimes drive the vultures (turkey-buzzards) from a putrid carcass and feed on it themselves; but I think they only resort to carrion when hard pressed with hunger. It is not a favourite with the country people in America, nor with the Indians, but it does not seem to be so much persecuted as the wolf, probably because it is not so destructive. But thousands are destroyed by the poison and traps laid for wolves and other animals, for it is not so cunning as the wolf, and is easily caught. Dogs, too, kill many when they venture near the homesteads in search of poultry. Yet the coyote

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is not threatened with such speedy extinction as the wolf. It is quite a feature of the prairies in the Central and Southern States, but is found, as I have already stated, in nearly every part of North America, as far north as Hudson's Bay, or nearly so.

CHAPTER II

THE PRAIRIES OF THE MISSISSIPPI VALLEY (*continued*)

THE prairies are a world in themselves, and to describe every living creature found upon them would fill volumes. I confine myself here to a notice of those animals that are more peculiarly inhabitants of these vast plains, though not, perhaps, exclusively so. By "animal" please understand the naturalist's meaning of the word, which is any living creature. A fly is as much an animal as a bison; so a root of grass is a vegetable, as is a pine or an oak. This may upset popular ideas and prejudices, but it is certain that there are two known kinds of life, and at *present* two only—animal life and vegetable life; and to one of these two great kinds of life every individual life, great or small, belongs. There may be more kinds of life yet to be discovered. Mind, I do not say that there are, but he would be a rash man who said positively that a stone does not live, that there is not life in the dancing sunbeam and the laughing water. Have you not noticed that the very earth breathes; how else should turning it up with spade and plough to the fresh breath of heaven increase its fertility? That which lives can be killed, and earth is killed when baked into a brick, a thing that, useful as it is, strikes sadness into the heart of every true lover of Nature when it takes the place of a tree—in other words, is formed into a "township."

Many persons who have spent long years of their lives in great cities are stricken with a kind of horror when taken for the first time on to the prairies. "How desolate!" "How dreadful!" they exclaim. "How can

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you live and find joy here?" Ah! how I pity those people who cannot realise the sense of freedom, of health and strength, that the very odour of the prairies gives a man. There is no air like prairie air; no, not even the grand freshness of the boundless ocean itself. No tonic to compare with it. Such an appetite as it induces! It is a common thing for a hunter or a cowboy to eat a dozen pounds of meat per day (some eat twenty pounds), and *feel the better* for it. I have experienced that a life on the prairies will increase a man's strength twenty or thirty per cent. You soon feel as if there was no limit to your physical powers. You feel that to lift an ox would entail but trifling exertion of muscular power; and the saying, "Live for ever, O king," loses its Eastern exaggeration in your estimation, for the fear, the very thought of death, is lost in the glorious courage born of the purity and sweetness that you inhale with every breath of prairie air.

The loveliness and variety of the prairie odours are quite indescribable, as are its superb wild flowers. It is a paradise. No man who has lived on it long enough to know it and love it (no great time, I can assure you) ever experiences real happiness after he has left it. There is a longing and eager craving to return to the life. The vulgar cowboys and hunters, uneducated and unpoetical past all degree, never leave it except (alas! that I must stoop from the sublime to the ridiculous to record the disgusting fact) to get drunk. Their money gone, back they go, to get fresh strength and more pelf for another orgie; but if by chance they abandon the wild, free life, they soon drink themselves to lunacy or death, and their last babblings are of the glorious wilderness they all love.

The prairies are at their best in the spring and early summer. It is then that they are literally clothed with wild flowers of every known hue and variety, and shapes that seem without limit. As the summer advances the

herbage is scorched to tinder, and it is at that season that prairie fires most often occur. I believe they sometimes break out spontaneously as the result of extreme sun-heat, focussed, possibly, by some refractive stone or mineral; but more frequently they are caused by some careless cowboy, or other wanderer, throwing down the match with which he has just lighted his pipe. These prairie fires are terribly destructive to game and stock feeding at a distance from the farms, but cause no danger to the experienced traveller. Although the fire sometimes travels *against the wind*, especially if the grass is very long and thick, it always runs more rapidly with it. All the threatened wanderer has to do, therefore, is to fire the grass against the wind in front of him, and long before the main fire can reach him he will have cleared a space in which he can stand safely; and if he performs the firing skilfully, he may often check the course of the fire. Otherwise it seldom burns itself out until it meets the course of a river which it cannot pass. A forest fire is the most dangerous, as from this there is no escape except by running, and that is not always performed very rapidly in the broken, bush-covered ground under the trees, while the fire travels with great speed, so that even mounted men have sometimes failed to escape.

Except in the neighbourhood of towns and farms, there are no roads on the prairies. If we confine the word prairie to the wild uninhabited regions, there are, of course, literally no roads; but the plains are deeply scored by tracks, even to this day, worn during countless generations by the bisons, which seem to have always followed the same routes in their migrations and wanderings. These tracks are likely to endure, for the bison, with wonderful sagacity, have chosen the easiest and safest paths, avoiding ravines, crevices, and bogs, so that travellers invariably follow them. So deeply are these tracks worn that, even if they were not kept fresh by frequent passage of horsemen and waggons, many years

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would probably elapse before they were obliterated ; indeed they may possibly be traceable for ever.

As you ride over the prairie a delightful aromatic odour arises to the nostrils, issuing from the crushed herbage. This is one of the charms of the prairie. Formerly the presence of the bison could be ascertained by this odour, which arose so strongly, if the herd was numerous, that it could be perceived, especially by the quick sense of smell of the Indians, at a distance of ten or twelve miles ; and often led to the detection of the animal when its presence in the neighbourhood would not otherwise have been suspected.

It is dangerous to ride carelessly over the prairie in many places, especially where the herbage is tall and lush. There are so many ravines and fissures that are not perceptible until you are close on the brink of them that accidents of a serious nature often occur to reckless riders. There are also dangerous quagmires and quick-sands. I have heard that many bison were formerly lost in these; but I strongly doubt the fact, as I think the animal's sagacity would lead it clear of these snares. The fact that the bison-tracks always avoid such bad places confirms my opinion. If any were ever lost in these bogs it is most likely that they were driven in by bands of hunters or Indians, who were ever ready to destroy a couple of hundred animals that they might secure three or four head.

For the reason given, and owing to the generally rough nature of the country, no vehicle except a strongly built waggon is of any use for travelling on the prairies ; and the owner of it should be able to perform rough repairs himself on the spur of the moment, or he may find himself in an awkward fix. For it is still possible to find yourself a hundred miles from everywhere. Nearly forty years ago I had some experience on the prairies, which were then infested by Indians and freebooters, who called themselves guerillas ; but this danger is not now to

be apprehended. One may travel the prairies from end to end and not see an Indian, except in their own territory; but there still lurk there a few blackguards of the rowdy class, who live by preying on the honest traveller.

Although large districts of the prairie may be described as treeless, yet trees are very generally scattered over the prairies as a whole. There are even woods or copses in places, while odd trees and scattered clumps are frequently come across. On the flat grounds near the courses of some of the great rivers, as the Mississippi itself, there are extensive forests; but we exclude these from the prairies. Let us take an imaginary ride over the prairie proper, starting from our camp in the heart of Arkansas, about fifty miles from the White River. This spot is a typical prairie. The country is undulating and not too rich, for in the State of Arkansas, which is about the size of England, there is almost every imaginable kind of land, from the richest to the poorest. From where we stand we can see some six or seven miles in most directions, over a barren-looking, down-like country. There is no ground in England that I wot of with which to compare it. The nearest idea, perhaps, may be acquired by imagining the Sussex downs covered by a tall, reedgrass-like growth, which has been burnt pretty brown by a fierce sun. Near by there is a hill of two or three hundred feet high. We ride up it and gain a much more extensive view—twenty miles, or perhaps thirty, in one direction, over the same monotonous range of country. A dozen miles away we catch the glint of a stream, a tributary of the White River. There are just six trees within view. They are of no great growth, and two of them are dead and weird-like in appearance. In one of these trees there is an enormous nest, rendered more conspicuous by the leaflessness of the branches. You are a stranger—a new chum,¹

¹ This slang term, though now almost exclusively used in Australia, originated in the States.

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and are somewhat struck by this great nest in the dead tree until your eye suddenly catches a more remarkable sight near the river. "What is that immense, dark, cloud-like streak yonder? It seems to move!" you exclaim. "That, my friend, is a herd of bison, probably fifty thousand strong." You are lost in amazement for many minutes, and it is with some difficulty you are persuaded to lose the magnificent sight by riding into the hollow. It has so impressed you that you can talk of nothing else, and desire a closer view of the immense herd; and we ride in its direction, carefully loading our rifles as we go. It will be remembered that I am writing of thirty or forty years ago, when the breech-loading sporting rifle was unknown amongst American trappers, and even the Minie rifle was but rarely seen in their hands.

On our way we pass near the dead tree with the huge nest in it. An enormous bird is perched on one of the dead branches and flies off heavily, but gracefully, as we approach, and is speedily followed by another from the nest, where she has been sitting. They are golden eagles, a bird as common (or commoner) in America as it is in Europe. As they go off the male bird utters a cry, evidently a call to his mate. She does not reply, but follows him closely; and if we watch them, we shall see them alight on the nearest tree, in this case a couple of miles off, where they sit silently turning their heads, with their bright, piercing eyes, now this way now that. They seem able to see and to watch, even at that great distance. Occasionally the male utters his sharp cry, and now the female generally replies. They are evidently disturbed, if not distressed, but make no fussy movements. They do not wheel round the intruder, and strike at him with beak or talons, as some writers have asserted. They always go straight away; sometimes out of sight, sometimes only to the nearest elevated post, tree, or rock, from whence they can watch the proceedings of the invader.

We climb up to the nest at the risk of our limbs and

necks, for it is placed quite at the top of the tree, and the branches are treacherously rotten. The height in this case was about twenty-five feet, but we have known nests placed within a dozen feet of the ground. In trees we have never seen a nest above forty feet from the ground, and trees of greater height than that are not selected, even though they are near the birds' haunt; but if the eagle builds on rocks, the height is always great and the site inaccessible. Trees are the most usual nesting-places in the Mississippi Valley, and the bird seems to be indifferent whether they be living or dead; but, if not on the actual tree where the nest is placed, there is always a bare branch close by where the male bird may perch, apparently to watch. I notice that all birds of prey seem fond of perching on exposed places; eagles, vultures, falcons, kites, and owls, all have I seen on dead boughs, rails, posts, telegraph-poles, and similar positions.

Reaching the nest, we find it so large that one of us can lie completely hid in it, and the birds must have undergone tremendous labour in building it, since we know that there are but few places within sixty miles where materials for its construction could be found in any great quantity. But the nest is added to every year, and in this case has probably been gradually formed. It is a rough collection of sticks and roots, with a vast quantity of feathers on the top, which appear to have been collected from the birds they have preyed on, mingled with their own shed in moulting. At least they were so loosely placed there, that they appeared to have been promiscuously dropped rather than designedly collected. On the centre of this bed lay two beautifully shaped eggs, about the size of those of a swan. There was no perceptible difference in the size, as there often is in the eggs of birds of prey; but one was much more finely mottled than the other. I doubt much if anything approaching a correct idea of the colouring of the eggs can be conveyed by a description. The ground colour was a light grey of lavender tinge, and the spots

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and blotches, of many different degrees of intensity, brown, chocolate, grey, reddish, and purple. I have heard of eggs that were without spots, or had but few, but I have never seen such eggs. They vary much, however, in colouring and marking. Golden eagles' eggs are very handsome objects.

The nest itself had undoubtedly been used for many years. Some of the sticks of which it was composed were so rotten that they crumbled to pieces at the slightest touch; and the whole nest was exceedingly filthy, and stunk abominably. Some bones and fragments of skin of a pretty big fawn lay in the nest, showing that the strength of the birds was equal to carrying a weight of thirty or forty pounds. I recognised feathers of ducks, prairie-hens, herons, and domestic fowls. The latter must have been brought from some farm or ranche in the district; and it was the only nest of the few I have had the opportunity of examining that was partially lined with the feathers of waterfowl.

The power of flight of the golden eagle is very great, but I do not think they roam over a very extensive tract of country. You see them almost always in pairs, and a pair seem to haunt the same spot for years, returning to the same nest to breed. The young are well developed before they leave the nest, and do not seem, as a rule, to remain long with their parents after they are strong enough to fly well. Often only one bird is hatched, and the other egg is either addled or broken. I have never seen more than two eggs in a nest, but I have heard from Indians and others that there are occasionally three, or even four, eggs in a sitting. The Indians used the eagle's feathers much for making their feather crests.

I have never seen eagles fight together, but probably they do, like other species of Falconidæ, for you never find two pairs in the same district. They usurp a territory over which they hawk, and, though you may find small

birds of prey in the same district, there will be no other eagles within many miles. It is singular that a bird like the golden eagle should frequent open prairies so much in America, though it is to be understood that it is not the general habit of the species, which largely frequents mountainous districts and forests. I believe in the Old World it is rarely seen in the champaign country.

It is advisable to caution the unpractised naturalist in America that he may easily mistake the white-headed eagle's nest for that of the golden eagle. Like that of the latter, it is placed in a tree, and is an equally huge structure. In a word, the nesting habits of the two birds are identical; but the eggs of the white-headed eagle are pale grey, without blotches or other markings, and almost always exceed two in number. There are generally three eggs in a nest; and should there be young birds, the nest may be instantly recognised by the bones and other remains of fish with which it will be strewn should it belong to a white-headed eagle.

The white-headed eagle is the American national eagle, which is represented on the States' coat-of-arms. It is found, I was going to say, everywhere in North America. It has, certainly, a very wide range, north and south, and from the shores of the Atlantic to those of the Pacific; but if found on the prairies, it is always near a great lake or river, for it lives almost entirely on fish, which it captures in a very expert and graceful manner. It is a quarrelsome bird, but not a very plucky one, fighting shy of birds which can hold their own against it. Its nest may often be found in trees on the banks of the Mississippi, and it generally builds at a greater height from the ground than does the golden eagle. It never, to my knowledge, builds on any other site than a tree; and in this it differs from the golden eagle, which prefers rocks, if they are conveniently situated with regard to its haunts.

The climate of the prairies is remarkable for extremes

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of heat and cold. In summer the heat in the daytime is often killing, the nights bitterly cold; but it is in winter, with the wind northerly, that you realise what excessive cold means. "You can feel," as a cowboy once said, "your bones freezing like gas-pipes;" not an elegant simile, but one that struck me at the time as being appropriate enough. It is a serious trouble to be caught in a blizzard on these prairies, especially if you are the proprietor of an ox-waggon. The oxen fear the blizzard, and are got to move at all with difficulty. They desire to turn, so that they may have the shelter of the waggon at their backs, and it is not always bad policy to let them have their way. They show wonderful instinct in making for the nearest shelter, such as a rock, ravine, or group of trees. If you know of a ranche or farm in the neighbourhood, your wisest plan is to make for it on the first sign of the approach of a snowstorm. You are sure of a hearty welcome, for the Americans are the most hospitable people in the world. No fear of meeting with a Nabal in the States. If one attempted to settle there, the land would vomit him out.

Years ago, whole teams of horses and oxen, with the men, were sometimes lost in these awful blizzards; and I have heard of the men being dug out, when the commencement of a thaw revealed their whereabouts, standing upright with the horses—dead, of course—and frozen stiff. But these were usually novices; the old hands and the Indians rarely came to grief. Long experience taught them the folly of striving against the blast, and that the safest course to pursue is to encamp without delay. There are always some natural shelters that can be improved if you have tools, and the lee of a waggon affords good shelter to the cattle, especially if the snow is piled up on the weather side. A wall of snow round the camping-place is a further advantage, as it prevents drifting on the ground you occupy. Such expe-

dients, poor as they may seem, are sufficient to save the lives of man and beast ; but, as I said, never neglect making for house shelter if it is within reach of a day's journey.

Insect life is very abundant on the prairies, and the ubiquitous mosquito will soon apprise you of his presence in damp situations and near the river. This bloodthirsty little wretch is found everywhere, all the world round, it seems to me. There are myriads of them in the Arctic portions of America around Hudson's Bay, and they are scarcely more abundant in the tropical portions of the southern part of the continent. It is a great mistake to suppose (as I find many people do) that hot countries are the home of the mosquito *par excellence*. I am sorry to find that it is becoming known in England ; and many are sometimes seen flying about in the neighbourhood of the docks, having evidently been brought over by the shipping, probably in an embryo state. Some think that gnats are mistaken for mosquitoes, but there is no real difference between them. Both this year (1900) and last, many mosquitoes have appeared on Tottenham Marshes and about the River Lee. The difference between a mosquito and a gnat is but slight, and the one is easily mistaken for the other by inexperienced persons ; in fact, the mosquito is but a variety of the common gnat, and is often confounded with it by experienced persons, as I have proved over and over again. I have myself been mistaken about it. Carefully comparing the two insects, I am inclined to think that it is impossible to tell them apart with any certainty. The mosquito is slightly broader in the wing, shorter in the body, almost imperceptibly different in the sucking-tube, and bites and sucks quicker than the English variety. Practically it is a gnat, and persons arriving from abroad always call them midges or gnats in the States until they have suffered, when the miserable little beast is at once called a "mosquito." The mosquito appears to be more virulent than the English gnat, but

it is the number of the "stings" rather than the severity of the separate bites which causes the suffering, and some persons are more cruelly affected than others. I have seen them bite living frogs without affecting the animal injuriously that I could perceive, and cluster on a dead frog. They also cluster on dead carcasses and on fresh meat, apparently to feed; and worry other animals than man. They are a universal pest to the traveller. Fortunately civilisation reduces their number, and in towns they are not so prevalent. When they bite fur-covered animals they choose those parts for the attack which are bare, such as the nostrils and eyelids, and the dugs of cows, which are often greatly tormented by them.¹

It seems scarcely necessary to ask if the mosquito injects poison, yet I think that there is no reasonable doubt that it does. But mosquito bites are generally made more irritable by the incessant scratching of the sufferer, who often tears the skin till he transforms several adjacent bites into one broad sore, and occasionally the sore becomes very malignant, eating deeply into the flesh. Those who have suffered nights of restless torment from a plague of mosquitoes will admit that the subject deserves all the space I have devoted to it. I will, therefore, just mention a few simple remedies to those who may have the misfortune to need them, and, what will perhaps be thought even better, give a hint or two by following which a person may avoid being bitten.

You will observe, shortly after being bitten, that a thin, perfectly clear matter can be pressed from the bite. Expel as much of this as possible with the aid of a watch key. If you have scratched the bite into a sore (which you should avoid doing), you must poultice it with bread.

¹ The bite of the American mosquito is more virulent in some places than others, and imported specimens in England seem more poisonous than the native breed.

Whisky, or brandy, and salt is an excellent application; so is any of the following: Friar's balsam, diluted carbolic acid, ammonia and water, hazeline, and, indeed, any antiseptic. In the case of a sore, afterwards dress with carbolic oil on lint, and keep the wound tied up.

For preventing the attack of the mosquitoes, tobacco juice rubbed over the hands and face is a sure preventive, and so is paraffin oil; but the smell of both these is highly offensive to many persons. Simple olive oil will sometimes keep off the insects. Remember that mosquitoes do not confine their attacks to the face and hands; and do not lie naked at night, as you are often tempted to do in hot, stifling weather. Nets are of little use as a protection, for the mosquitoes contrive to find their way within them somehow or other. Occasionally a mosquito will gorge itself with blood, so that it cannot fly away, and I have noticed that when this happens the bite gives little or no trouble. When the country has been flooded, and is beginning to dry up with the intense heats of autumn, the mosquitoes hovering over the stagnant pools frequently assume the appearance of a moving cloud of dust, so great is their number.

As we ride over the prairie we disturb many grasshoppers of extraordinary leaping powers. They seem to shoot from in front of your horse, and at night-time keep up a lively chirp, which seems to come from a great distance. They have favourite spots on the prairie where they mostly congregate.

Should the carcass of a horse, cow, or deer be lying on the prairie, on turning it over you will probably find a number of carrion-feeding beetles under it. Some of these beetles are of great size, three inches in length by nearly two broad, active and aggressive. I caught one which actually weighed an ounce and three-quarters. They will nip you strongly in their efforts to escape, and upon being dropped, burrow under the carcass with great rapidity. I cannot define the species, which is

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black in colour, with a strong green sheen in the sunlight. There is also a very beautiful, bright green beetle of much smaller size, with the same habits; and quite likely you will find buzzing about the same carrion a number of predatory wasps, carving out minute steaks of the meat, with which they fly away, buzzing angrily. If these wasps are interfered with they will attack you readily, and you will probably get a severe sting. As to flies, they rise in a black cloud from every piece of putrid filth that lies in your way, and of more species than I can enumerate.

I have noticed a curious fact concerning earth-worms on the prairies. I have never met with any on the open ground when having a trench cut for drainage round a camping-place, or seen them in the wilds; nor could I find any on the banks of rivers in the prairies when wanted for fishing-bait; but wherever there is a farm or cultivated ground they are abundant enough, and of great size, often nearly a yard long. They harbour much under dung-heaps if there is not much moisture, and most farmers are aware that they increase greatly the fertility of the earth. Is it generally known that earth-worms can climb walls and plank-palings? They do so, slowly and surely. They often climb up the outside of water-butts, and falling in are drowned. Until I discovered this I thought they must be dropped in by birds, and wondered to find so many at the bottom of the butt when cleaning it out. What their object is in this strange wandering I cannot guess, unless they are in search of moisture. I only know the fact, and that it applies to worms in England as well as in America. Worms are very sensitive, though they can neither see nor hear. Touched never so lightly with a feather, they withdraw to their holes with lightning-like rapidity, as they will if a large stone is dropped to the ground some twenty or thirty yards away, evidently feeling the vibration of the earth. They may also be induced to come

forth by tapping on the ground at the mouth of their hole. Birds so capture them, rapping lightly at the door, as it were, until the silly inmate shows his head, when he is lugged forth with great skill and speed. A man whom I knew used to procure worms for fishing purposes by the cruel trick of pouring water, with a little mustard mixed in it, into their holes. This, naturally enough, caused them to hurry forth immediately.

In the southern portions of the Mississippi and its affluents there are still a considerable number of caimans, or alligators, as the people call them. The caiman is an inhabitant of the South American rivers, where there are many varieties, but I can perceive but little difference between the great caimans and the North American alligator. However, we will follow the popular custom, and call it an alligator, which simply means a lizard.

The alligator is, in my opinion, the handsomest member of a race noted for anything and everything rather than beauty, but I quite agree with the American opinion that it is "a varmint." It is a dangerous and a destructive creature, and the boatmen and ranchmen lose no opportunities of thinning its numbers, and it is gradually being destroyed, or driven into the inaccessible portions of the country. It is not now, perhaps never has been, so numerous in the Mississippi itself, and the larger tributaries of that mighty river, as in the smaller streams and flooded country, of which there are large tracts at all seasons of the year; and the extensive swamps of the Southern States are particularly haunted by it. In most districts it has learned to fear man and shun him, and the crack of a rifle will cause a party of them to disappear beneath the water instantly. It is everywhere a shy creature, even in South American rivers, which abound with them; for I must persist in believing the alligator to be a caiman, of which I have seen about thirty varieties, differing in size more than anything else. The alligator, I ought to mention, is

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the only species I have noticed as far north as the States.¹ The whole genus is evidently intended by Nature to be the inhabitants of warm climates.

I took great interest in studying the habits of the Mississippi alligator, as it is always called in the States, though not confined to that river, or even to the Mississippi valley, extensive though it be; but it is not easy to watch such a creature, especially if engaged in other business. An observer requires to be able to spend days and nights in continual watching to learn much of real importance. What little I have learned, however, is reliable.

The alligator is more active at night than during the day, but it will seize its prey at all times. All night long you may hear them making a deep puffing noise, generally called a bellow by the people of the country, evidently calling to each other. They lurk in deep holes under the banks of rivers and pools, especially where the roots of trees have been washed bare and cluster into the water. These holes they deepen with their snouts, and probably sometimes entirely form at convenient spots. Each alligator seems to have its own particular hole, into which no others intrude. In the pairing season they forsake these holes for a time; and when the young are hatched the female remains with them amongst sedge and thick growths of water-plants on the banks of rivers, or in shallow marshes, until the young have attained some size. She is a fond and jealous mother, but nevertheless the young begin to wander as soon as they are hatched, and are often met with when she cannot be discovered. There are always some of the young with her, however; and she watches her eggs until they are hatched. Sometimes she squats upon them for hours at a stretch, but I think this is merely to guard them, and does not in any way assist their development. The female alligator will readily attack any one who meddles with her eggs or her young, but the chief enemies to these

¹ See Note A, Appendix.

are birds and beasts of prey, especially turkey-buzzards. These latter are adepts at discovering the eggs, thousands of which they destroy, and the alligator has a busy time of it driving them away. Occasionally a turkey-buzzard is snapped by the alligator, who devours with gusto the delicious morsel, which must be the very essence of carrion to her palate ; but, as a rule, the buzzard is far too wide-awake to be caught, and while she chases some of them others are tearing her eggs from their concealment.

If you wish to find the eggs, you cannot do better than watch the buzzards, and when you see them busy at a damp spot among the sedge, advance and find the mother, and shoot her, or you may learn more than you will ever be able to record. The buzzards will then retire to the nearest trees and patiently wait for your leavings. The eggs, usually about forty in number, are deposited close together in a hollow place, and covered with grass and leaves, which must have been scraped over them by the alligator. I had expected to find them soft, parchment-covered sacs, but they are hard, quite white, round, and about the size of a cricket-ball. On cutting through the shell you find a yolk, floating in very watery albumen. There is a rank, musky smell with them, but the yolks are said to be eatable. You will probably turn with disgust from the mere thought of such a meal, as I did.¹

The nest is placed in a damp spot, but always where the sun can act upon it during the hottest hours of the day ; so heat is necessary to the hatching of the eggs. This cannot be furnished by the mother, who is as cold-blooded as a fish. She often squats on them, it is true, but I cannot say that she does this regularly, or at what hours of the day. She is far more frequently found watching them from a hiding-place close at hand.

¹ There is the same musky taste and smell in the flesh of the alligator, and I have noticed a similar odour in the flesh of all carrion-feeding birds that I have closely examined.

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It was formerly believed that the alligator, like the rhinoceros, was invulnerable to the bullet, and a man once told me that when he fired at one he perceived the bullet chip off a piece of the creature's horny hide. This might be so, but it was because he fired too high, and struck the ridge which runs along the back. The alligator's hide can be pierced by a harpoon or well-tempered lance, and I have seen one killed with a felling-axe. A bullet goes through it as easily as through paper, and if the alligator is struck in the head or body, it always dies, though perhaps not immediately. As a matter of fact, the alligator, and all other caimans, are easily killed, and do not evince that tenacity of life which characterises most reptiles. When shot, they generally sink instantly to hide, but sometimes they flounder a good deal. If the bullet reaches the brain, which is very small, the reptile is killed instantaneously, turns over on its back and floats. They always float when dead, and the turkey-buzzards may be seen flocking on the carcass in the middle of the stream.

As to the food of alligators, they will eat anything, but fish is the staple of their food. Bull-frogs are often devoured by them, and young waterfowl and similar small fry; and it is not safe to let dogs run in water where they are likely to lurk, for they are extremely fond of dog-flesh, and valuable dogs are often lost. All sorts of wild animals fall into their jaws when they come to the water to drink, together with sheep, cattle, and horses. I was told of a cow which, on being watered at a creek running into the Mississippi near Natchez, suddenly uttered a bellow of fright and pain, and limped on shore on three legs, the fourth having been bitten clean off by an alligator. The other cows ran over the plain in wild fright, and were not collected again without much trouble.

Sometimes the alligator seizes its prey with its jaws and drags it under the water, but more frequently it

knocks it into the water with a side-ways stroke of its flattened tail, and sometimes it does both to the same victim, especially if it is large and strong and struggles much, first seizing it with the jaws, and then disabling it with repeated blows of the tail. The victim is always killed by drowning, the cunning reptile holding it at the bottom of the water until it is dead before proceeding to tear it to pieces. Fish are disabled by a blow of the tail, and the alligator frequently kills the king-herring, a big fish often exceeding six feet in length, and weighing a couple of hundredweight.

The stories of alligators upsetting canoes I do not believe, and the number of human beings who lose their lives owing to their attacks is not great. Careless bathers are the most frequent victims, but I have seen men who have been in their clutches and escaped. One man seized the branches of an overhanging tree as he was being dragged down, and freed himself by kicking vigorously with his other leg. He was lamed for life, the flesh of his left leg being shockingly mangled. Others were saved by the timely help of comrades, and an Indian delivered himself when seized some yards from the river's brink by beating the reptile with his tomahawk. Others have not been so fortunate, and in the year 1870 I traced twelve deaths from alligators in four Southern States only—Mississippi, Louisiana, South Carolina, and Florida—but I could never obtain statistics of the number of deaths occurring in the States generally from this class of accident. However, I think I may say that accidents are generally the result of carelessness on the part of the victims. Bathers should be particularly careful; and for their information I may note that the alligators avoid those parts of the rivers where there are cliffs at the banks which prevent their landing, as at Natchez, mentioned above, which is built on a high bluff. But though there are no alligators in the Mississippi at Natchez, there are plenty in the swamps which

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are found about twenty miles north of that town, which would seem to indicate that they occasionally pass up and down the river; so caution is advisable everywhere.

In the stomachs of all the alligators which I have seen opened there were a number of pebbles, generally thirty or forty, varying in size from that of a sparrow's egg to that of a goose's; and in one case a stone was found which weighed four pounds. I suppose they are swallowed to assist digestion, like the fine gravel in a bird's gizzard. I have also heard of articles being found in alligators' stomachs which were supposed to have belonged to the human victims they had devoured, but no instance of this came under my own notice. I think that alligators take longer to digest their food than do the higher animals, and also feed less frequently.

Alligators, though active creatures when needs be, spend much of their time in apathetic sprawling about. They float down the stream, motionless as logs of wood, which they greatly resemble viewed from a short distance. On shallows and mudbanks they lie in loathsome confusion, looking like some unclean vermin of gigantic growth. They sprawl one over another, never moving for hours at a stretch, unless disturbed by the approach of danger, which they are quick to detect.

Perhaps it will be thought that this long description of these reptiles is somewhat out of place in a chapter devoted to the prairies, but it is in the valley of the Mississippi that they most abound in North America; indeed, they are scarcely found at all in any district outside the drainage of that river or its tributaries, and it is most convenient to describe them here.

There is on the prairies in some places, especially in Kansas, a spider about the size of a large house-spider, but with longer legs and very dark in colour. It runs with exceeding swiftness, and makes its web on the grass in a horizontal plane about eighteen inches from

the ground, and I observed that flies buzzing about near the surface of the earth were always caught on the under side of the web as they attempted to fly upwards. The webs covered about as much space as would a pocket-handkerchief if spread out on the grass, and were never placed near each other, the spider being far from abundant. I accidentally observed that they were very quarrelsome, two fighting for possession of a web, and one killing the other, on whose body the conqueror began immediately to feed. I found another spider and dropped it on the outside of the web. Instantly the possessor left his meal and another fierce fight took place, ending in the death of the one I had made an intruder, whose body was then ejected from the web. I found a third spider, which was much bigger than the holder of the web, but after a five minutes' encounter the latter was again the conqueror, and the dead body of the big fellow ignominiously dropped from the web.

These spiders, which I could not identify, easily mastered the large and venomous insects which I, for the sake of experiment, dropped into their webs. The spiders flew upon them instantly, and killed them almost without a struggle. They seemed to hunt, as well as trap in their webs, for I several times saw them running over the ground with a big insect in their clutches. It is about the fiercest spider I have met with. The webs were very closely woven, resembling those that may be seen covering the hedges in autumn time in England.

The number of living creatures which exclusively inhabit the prairies is not great, but most of those which haunt the mountains and woods are occasionally found on them, and some seem to indifferently inhabit all districts alike. Among those that are particularly denizens of the prairies the well-known prairie-hen deserves a few words. The flesh of this bird is particularly sought after by Americans as a delicious morsel,

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and with good grounds. Formerly it was imported to England by tens of thousands, but the American Government, fearing, it would seem, that the bird would be exterminated, forbade the export. Attempts to acclimate it in England have been made, and have failed.

The prairie-hen is a species of grouse, but must not be confounded with the sage-hen, which is also much sought after, but does not inhabit the Mississippi Valley; at least I have never found it in any part of that region. The prairie-hen avoids the flattest portions of the prairie, preferring those parts where the undulations of the ground rise into hills of a few hundred feet elevation. It is wary and not easy of approach, but is generally very numerous in a district. The cocks have a habit, very common among all the grouse tribe, of running up any little hillock or elevation of the ground to watch the surrounding country, the hens meanwhile skulking in the herbage close by. Early morning and evening are the best times for shooting them, as then the sportsman may walk up pretty close before the birds rise. They will carry a lot of shot, and it is advisable to have the cartridges charged with not smaller than No. 4 shot, otherwise you will lose many wounded birds, for they run well, and soon find excellent cover in the herbage of the ground they frequent.

Their food consists of young shoots of herbage, grass-seed, and small snails and slugs, and I have found the elytra of beetles in their crops. They nest in holes scraped at the base of masses of rock near abrupt risings of the ground, and in similar situations where they are not likely to be interrupted by other creatures or by man. The eggs greatly resemble those of partridges, both in size and colour, and number from twelve to eighteen, which is more than the grouse tribe lay in a clutch as a rule. I say "as a rule"; but I have no knowledge that any other grouse lays so many. The European

partridge is prolific, but it is so protected that I look upon it as a domesticated bird like the pheasant. It is fed, and provided with artificial cover, and in such circumstances the fecundity of all animals is greatly increased. Fifteen is a large covey of partridges, but I have known twenty-two eggs found in a prairie-hen's nest, and they seem to be generally successful in rearing the whole brood; and it is an undecided question whether they do not have a second brood during the breeding season. In my opinion they do. So it is not surprising that they are exceeding plentiful in the districts they most favour. Yet they are a wild bird, and the man who shoots a dozen brace in a day has done a hard day's work. But they are easily trapped at night. When it was permitted to send them to Europe, a couple of hunters generally netted two hundred brace in a single night. The cock birds may also be shot freely by a concealed gunner imitating the reply call of the hens during the pairing season; but this is a cruel and cowardly method of supplying the pot, to which, I am happy to state, the meanest hunters seldom resort.

CHAPTER III

A SHORT CHAPTER ON COW-PUNCHERS AND COW-STEALERS, AND SUCH-LIKE

AN account of the people of a country is, in my opinion, an important branch of its natural history, and not by any means to be neglected. I have already hinted pretty strongly, I hope, that the American is a man after my own heart, but I don't say that he is without faults. He has a taste for "nigger" roasting, for instance, that, like the tobacco-chewing of our old jack-tars, is deplorable. Do I mean that nigger-roasting is scarcely a worse fault than chewing tobacco? Well, really, you know, like the witness in the divorce court who had a leading question put to him, "I'd rather not answer." I went to the States thinking and feeling strongly on the "Black and White" question, and very angry with Brother Jonathan for his laxity of opinion and conduct regarding "our down-trodden fellow-citizen"; but I had been down South considerably less than a twelvemonth before I became converted to the opinion that "tarnation cuss" was a very mild expletive when applied to the man and brother. The less said of black manhood the better; as to the brotherhood, "I'll none of it." In the States there are many men and many manners. We cannot do better than begin at the bottom of the scale of humanity—with the black.

He is now a well-educated coon is the black, and, withal, amusing to a certain extent, but the British music-hall or seaside representation of him conveys no idea of him as he exists in the States. He does not use

such phrases and words as are put in his mouth by the popular negro-comedian, but tells you to your face, with irrepressible cheek, that he speaks better English than you do ; and, thanks to the paternal care of Uncle Sam, he is often not far from the truth when he makes the assertion. But in morals and behaviour he is a sad fellow. Were it not for him, a woman might walk the entire length and breadth of the land without fear of insult, aye ! or of so much as an impertinent look ; were it not for Judge Lynch, there are many places in the Southern States where she would not dare move a mile from home. Assaults on women and children in the States are confined to black miscreants ; at least, I never heard of a white being concerned in this abominable class of offence.

Then your black is a thorough drunken, lazy rascal, and an eyesore and a pest wherever he congregates ; and as vindictive as a fiend. My first "eye-opener" to his character occurred in a drinking saloon at Memphis, Tennessee, just after the enfranchisement of the blacks had filled their souls with over-bearing pride and self-assertion. A coon came in, already half drunk, and demanded drink with an oath. He was ordered to "skedaddle" (a slang word for clearing out, in every one's mouth in the States at that time), and the bar-tender sprang over the counter to enforce the order. The black had evidently come in to provoke hostility, for he must have known that he would not be served in a house patronised by whites ; and it turned out that he had two razor-blades fixed between his fingers and in the palms of his hands. With these he began to claw like a cat, and before I well realised what was taking place the bar-tender and three of the patrons, or customers, were lying on the floor frightfully gashed, and covered with blood. The man I was talking with, a quiet-speaking, intelligent fellow engaged in cattle-raising, coolly drew a six-shooter, quite as a matter of course, and shot the coon dead with a business-like air.

The body was thrown into the street, where it lay until it was removed by some deputy-sheriffs. The bar-tender had an eye cut out, and the customers were frightfully injured and disfigured for life, if, indeed, they recovered.

The custom of using razors in their fights is very prevalent among the Southern negroes. They have a peculiar method of fixing the blade lengthwise between the fingers and along the palm of the hand; then, with a downward stroke, they will lay open the face of an opponent, or literally rip him open. There are few coons that have figured as dandies among the dusky girls that cannot show such a pretty set of scars that it causes you no small wonder that they have survived to exhibit and boast of their honours of war.

A more amusing feature in the black character is the fondness of the women for doctors and doctoring. A negress is never happy or well unless she is taking physic, and I have known medical men who made a regular trade—and a good one too—of drugging “aunties” and “mams” (pronounced marms). Aunty is a bad pay, however, and has to be charged accordingly; and I knew a certain Dr. J—— who employed a man purposely to collect his black debts, and this fellow would keep me laughing till my sides ached, narrating his amusing experiences when dunning for money among the coons, but his anecdotes were decidedly too coarse for repetition. According to his accounts, he never obtained an instalment of a debt until he had been many times advised to take himself off, because the boss was that day real wild, had his razor in his boots, and therefore could not be asked for money.

What is the destiny of the negro in the States? It is a weighty, almost an appalling question. Greed and sin planted him on the soil, but greed and sin will not root him out, for he has become, owing to his great increase, a power in the States. He will not dwindle and die out, like the Red Man. He is a parallel to the Irishman

in England; he is everywhere, yet not in prominent positions; doing the hardest and dirtiest work, yet among the idlest as a class; despised for his improvidence and sensuality, yet too strong and too numerous to be down-trodden. He is a source of danger to the land wherein he was a slave and is now a citizen, and will ultimately, in my opinion, give the Land of Freedom cause to curse the day he was ever brought to her shores; but I confess myself incapable of grasping the question.

A scale higher in social consideration, and ten times more interesting than the negro in America, is the Red Man, the original possessor of the mighty continent, the representative of the doomed race, of which already there remains but a remnant; but he is of so much importance that he must have a chapter to himself hereafter.

With the Yankee aristocrat I seldom came in contact, therefore I do not presume to attempt to word-paint him. The only difference that I have noticed between him and Old-World aristocrats is, that he seems to out-Herod Her—no—Brummel himself. He is rarely met with outside the big towns of the New England States, and there we will leave him.

But with the well-to-do farmers, traders, and middle-classes (for there is a middle-class in America), and the bulk of the people I have come into close contact in all parts of the continent, and have everywhere met with nothing but courtesy and kindness, and this especially where it is most needed and acceptable—in the wild and thinly-peopled portions of the country. Yet the people of America have their peculiarities. They are, as one of them said to Martin Chuzzlewit, "easily riled," especially if their country and institutions are criticised, and they are apt to be somewhat bumptious. They are also fiery tempered, and prone to take the law into their own hands with deadly vigour, as witness a little incident that came under my observation, no matter where or when.

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A certain Englishman of no character used to "lick" his wife. The Whiteboys (so called because they wore white masks for disguise) fetched him out of bed one night in his shirt, and gave him a fair warning of what the consequence would be if he did not reform. He still continued to cruelly beat the woman, until he was found one morning hanging by the neck from one of his own apple-trees. There was no inquiry or bother about the affair at all—there never is in such cases. Uncle Sam leaves the administration of the laws largely in the hands of his sons, who do not trouble much whether it *is* law or not, so that they are satisfied that it is justice. They will tell you that Judge Lynch is one of the best in the States, and I am inclined to think that he is one of the most impartial. Go where you will in the Southern and Western States, you will constantly hear of summary justice being executed on offenders, yet it is rare that an innocent man suffers. In any case, there is no authority to stop the people working their sweet will. The sheriff, who is the executive officer, is generally content to let the people perform his office for him. Should he interfere against their will, it is not improbable that they will hang him and his deputies too.

Yet life and property are as safe, or safer, than in most countries. I travelled for years in the States with a store-waggon laden with notions, gaining a livelihood by trading at outlying townships and stations, yet I was never robbed of the value of a thread or a shoelatchet, though occasionally I was "rounded-up," and had to drink the health of a party of rascals in my own whisky. A man who would without hesitation lead a party of cow or horse stealers would be the first to put a rope round the neck of the fellow who should rob a traveller of his purse or horse. To take a man's horse may be tantamount to taking his life: to take a dozen horses from a ranche, or a herd of cows from a run, is quite another matter. So is de-railing and robbing a

train; and should the sheriff and his posse come up and a fight take place, entailing the death of a dozen of the officers, no one calls that murder, or thinks evil of the men who cause the deaths. And should these same murderers meet you, a lone traveller, on the prairies, they will treat you with the utmost hospitality and courtesy, and would be the first to lend a hand to summarily execute the robber who should dare to deprive you of your personal property. This may seem a distinction without a difference, but it holds good in the Southern States.

A great deal, however, depends upon a man's popularity. Merely giving offence to a township or district may entail grave consequences on an offender, and men are sometimes ordered to clear out of a town or district, and they have to do it. Once told to go, they go, or hang. If they cut up rough, ten to one they hang without the chance to go. I have known a man lose ten thousand sheep in a single night, killed and ridden to death by a band of cowboys who had determined to get rid of an unpopular neighbour. Not a nice state of things, you will say; and I agree with you. But things find their level in the States. It is pretty certain that the owner of the sheep was, for seven or eight years of his life, a professional cattle-stealer. Hundreds of men take to cattle-stealing, and worse, for a time, as a pleasant life of adventure; afterwards settle down, and become reputable citizens, and most likely hold office. Where is the outraged law? you ask. Oh! anywhere, so that it is not obtrusive. If the people don't want the sheriff to interfere he had better not interfere, for they are "easily riled," you recollect, and every man is armed. There are no large bodies of police, and practically no regular soldiers; and according to law (as it stood in my time, at least) the forces of one State could not be sent into another:¹ so that sometimes militia and sheriffs were set at utter and successful

¹ That is, for police purposes.

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defiance by the populace, or, not unlikely, took sides with them.

I have had more than once to take shelter with outlaws and seek their assistance in time of calamity; and it has never been denied me, nor have I ever suffered wrong from the hands of those whose hospitality I was forced to seek. I have been asked to refrain from revealing what I had seen and knew of my entertainer; and that I have felt, under the circumstances, justified in promising. I have slept peacefully in the houses of men whose lives or liberty would not have been worth a rush had they dared to show themselves in such places as New York, Boston, or Philadelphia. And though I had a valuable team and waggon, and several thousand dollars' worth of stock in their sheds, never have I been robbed, as I stated just now, of so much as the value of a shoe-latchet.

CHAPTER IV

A DAY IN A CYPRESS SWAMP

WHO has not heard of the "Great Dismal Swamp"? But the Dismal Swamp is only one of many inundated tracts which abound in all the Southern States, more especially those abutting on the eastern sea-board. Some years ago a writer in an English journal remarked that a traveller might journey for days on the border of the Great Dismal Swamp, and see no other signs of animal life than an occasional snake, and the blue-jay, flitting from tree to tree. It is difficult to believe that the gentleman referred to ever saw the district he describes, or seeing it, used his eyes; for animal life is very abundant in all these swamps. I am not, however, going to describe the Great Dismal Swamp, chiefly because it is the object of this work to refer more especially to the most desolate and out-of-the-way places in America. The Great Dismal Swamp is not now so desolate a place as many other great swamps in the South and Eastern States. In the first place, a canal has been cut right through the middle of it, and it has been partly drained and greatly reduced in size. I suppose that it does not now cover (I am speaking at a guess) more than 250 square miles—a pretty good space certainly; but the swamp I wish to introduce the reader to covers eight or ten times that surface, if we allow for some slight breaks, which, however, are scarcely worth mentioning. I must ask to be allowed to draw a distinction between a swamp and a marsh, though I can quote no authority to justify my so doing. A marsh I take to be wet, sodden ground,

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on an open plain or prairie; a swamp, similar ground covered with trees and rank vegetable growth.

Swamps in America, as in other countries, are often formed by the overflow of rivers, but many of them are also fed by springs of water bursting from the bowels of the earth. The former usually dry up during a part of the year, or greatly diminish in size: the latter are always wet, and tend to increase rather than decrease in area. The particular swamp we are about to examine is known in its central portion as the Okefinoke, and extends from Georgia well into the adjoining State of Florida. Besides the main swamp there are many detached portions of large extent, and districts so closely overgrown with trees and bushes that it seems impossible to penetrate to their interior. These swamps are very prolific of animal life, but mostly in its lowest organised forms, excepting birds, which are abundant, and interesting in species. A most remarkable contrast to these swamps is afforded by the country a few miles farther westward, where the ground is dry and sandy, and water scarce; yet this country is not elevated or hilly. The soil, on the whole, seems to be poor.

The swamps are very dangerous to the health of man, especially to recent arrivals in the country; and precautions should be taken by the explorer before spending even a single day in their vicinity. I always take a big dose of quinine before starting, and repeat it daily while within the swamp. It may make your head ache, but that is nothing compared with an attack of malarial fever, which it will probably ward off. You should also take with you a couple of bottles of whisky; even if you are a teetotal fanatic, take them. You will find them invaluable should you have the misfortune to be bitten by a poisonous snake or spider, as you will see farther on. I also always carry with me, as an absolute necessary, a pocket-case of small surgical instruments, such as forceps, lancets, and needles, and a few drugs of powerful action,

such as chlorodyne, opium, ammonia, and castor-oil, for bowel troubles, tincture of steel for internal bleeding, or outward application in event of cuts, &c. It is well to have these simple remedies at hand in a country where you may be a hundred miles distant from medical assistance; and also advisable to make yourself acquainted with the methods of giving "first aid" in the event of gun-accidents, cuts, falls or bites, and claw-wounds from savage animals. I have repeatedly seen a very little knowledge save a man's life.

There is generally but little stagnant water in an American swamp, as we understand the word stagnant in England. You will not see that peculiar green slime, so common on English ponds and ditches, floating on the surface of an American swamp. The water is more often of a coffee colour, but clear, and frequently very deep. For this reason, and because snakes are everywhere lying concealed, you will require to move with extreme caution. The water is drinkable, but has an unpleasant, astrigent taste, and it is safer to boil it before use. Here and there you will meet with currents, the result of streams running through the swamp, or perhaps issuing from underground springs: then the water is much better.

Approaching the edge of the swamp where the trees grow thick, and peering into the gloom, you see a small dark pool completely shadowed by the cypress foliage. Beyond is a larger pool faintly discernible, and yet farther off another, into which a few rays of sunlight penetrate. Probably the first things that attract your attention, if you are a stranger to the country, are a number of columnar-like stakes, which here and there are twisted and notched into the form of elk's horns. These are "cypress-elbows" or cypress-knees, most dangerous to canoe navigation. A canoe you must have if you intend to explore the interior of the swamp, for it is impossible to penetrate far in any direction on foot.

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These cypress-elbows crop up everywhere, and are one of the most characteristic features of the swamp.

On the spot in the farthermost pool, where the sun shines most brightly, some decayed vegetation has drifted against the cypress-knees, and formed a small bank on which lies a moccasin-snake with a number of young ones gliding rapidly over her body, and in and out amongst the dead leaves. This is the most deadly of all the American snakes, though not growing to half the size of the rattlesnake, and the man bitten by it has but small hope of life. It is very numerous in these swamps, and though beautifully coloured and marked, has a particularly devilish look of malice about the eyes which makes it a revolting object to behold. It is not a large snake. The largest I have seen would not exceed forty inches in length, with a rather thick body about the middle. Its greatest peculiarity is the enormous gape of the mouth, which extends so far back that the top of the head seems only joined to the nape of the neck by a mere hinge. Should the moccasin happen to gape at you in a threatening way, you will be astonished at the frightful cavern of a throat displayed in so small a snake. The fore parts of the head —the lips and snout—are much blunter and thicker than in most snakes, and the creature is very active and rapid in its movements. The colour is light and dark shades of reddish-copper, glossed with a beautiful sheen, and the markings are the shape of a moccasin or Indian shoe—hence the name. The gape of the mouth is well defined by light, lip-like markings, and there is a slight ridge or elevation above the eyes, which I have not noticed in any other American serpent. Swamps and damp, low-lying districts, are its favourite haunts, and it is never found in dry, stony places, which are the resort of rattlesnakes and many other snakes. Rattlesnakes, on the other hand, are not met with in the swamps, they appearing to prefer dry haunts.

Moccasins are the commonest of the poisonous snakes of America, and bear the character of being the most deadly. I, fortunately, have never had experience of a moccasin bite, but though the Indians assert they have a specific for its cure, as they pretend to have for that of the rattlesnake, I think it is pretty certain that it is often fatal. It is certain that many of the Indians have perished from the bites of both snakes, which is a sufficient commentary on the value of their nostrums.

When the moccasin is surprised, it always tries to get away, and as its movements are very rapid, it often succeeds in making good its escape, especially as many persons are nervous in attacking it, intimidated by its exceedingly fierce aspect. If its retreat is cut off, it flies at its enemy without an instant's hesitation, and as it moves with lightning-like rapidity it is advisable to be extremely cautious in approaching it, and to strike it down with a stick without delay. Should you have the misfortune to be bitten, follow the advice which will presently be given, as your only chance of life.

Moccasins are good swimmers, and take to the water freely when disturbed, or to escape from their enemies. They never voluntarily attack men, and only do so as a means of defence when stepped upon or surprised. They glide quickly away at the approach of danger, which they are sharp to hear; but they seem to be heavy sleepers, and it is when in a semi-torpid state that they are most likely to be trodden on. They rise on their tails to strike if necessary, but in attacking a dog, or their prey, they shoot forward the head and fore part of the body a few inches above the ground. A small animal seems paralysed instantly, and a dog dies within an hour; but I am told that a human being will linger for five or six hours, being most of the time unconscious.

Storks, herons, and birds of prey are the chief

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enemies of the moccasin, and destroy great numbers of the young, though they are not afraid of attacking the full-grown snake. Either the serpent cannot penetrate their close-fitting feathers with his fangs, or the birds are too quick for him and beat down his attack; at all events, they are invariably the conquerors.

A noteworthy feature in the disposition of the moccasin is its attachment to its young. These do not leave the parent until they are a considerable size, and possibly the family party continue together for an indefinite time, for where you find one moccasin you may be certain there are others close at hand. I have not been able to discover if the eggs of the reptile are hatched within the body of the female; but if not, she must remain to keep watch over the spot where they are deposited, for the young are with her when they are only two or three inches in length. Their growth does not appear to be very rapid, and I have killed females which had young ones with them of three different sizes, which makes me think that she does not forsake one brood when she has another. She defends her young fiercely, and when she has them with her is less inclined to retreat than at other times, but will turn to confront an enemy while the young slip quickly into holes or under the dead leaves. I have never found moccasin eggs which I knew to be such, and although I have no data upon which to found my opinion, I think strongly that the young are born alive.

The moccasin feeds upon any small animals which it can capture, and I think upon fish also, at least occasionally. As precise information is of most value to the naturalist, I may state that I have actually seen them swallow young waterfowl, rats, mice, tortoises, and bull-frogs. They eject the indigestible parts of their food, as feathers, fur, and the shells of the tortoises. These latter are cast forth disjointed, which shows that their powers of disintegration must be enormous,

although it is only young tortoises that they appear to swallow.

Sometimes you will find, in out-of-the-way places, especially in hollows under the roots of trees, parties of twenty or thirty moccasins twisted together, with their heads in the middle of the mass of coils. They will not readily part company, and you may generally kill most of them with a stick before they can escape. By-the-bye, when you have killed a venomous snake, if you do not want it for preservation you should always bury it to prevent accidents, for the fangs are capable of poisoning a living animal many days after the death of the snake.

I am not likely to have a better opportunity of speaking of snakes in general than in this place, and I will therefore place the reader in possession of a few facts about these reptiles that may interest him.

In looking over old books on Natural History, and some modern ones, I am sorry to say, it is most amusing to note the errors of both authors and artists. To begin with, no snake ever coils itself round the trunks and branches of trees in the manner represented in the pictures which illustrate these works. Nor do they twist themselves round and round like a coil of rope on board ship. A snake cannot ascend a tree-trunk by coiling itself around it. Arboreal snakes seldom come to the ground, perhaps never, except by accident, and when by chance they find themselves there, it is not always that they find it easy to regain their natural position. They cannot ascend a smooth, branchless trunk by winding round it. If the trunk is rough and studded with knobs or excrescences, they swarm up the face of it till they come to the branches; but with large snakes this is a ticklish operation, and they often lose their hold and fall to the ground. Whenever they can they always regain their position by climbing up drooping or overhanging branches, and

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they will ascend bushes or low trees to reach such. When in trees they lie on the branches, not coiled round them, and the form they assume is like a double S, a W, or an M. The tail, which is prehensile, is the only part ever coiled round a branch, and that only to maintain their hold while they dart at their prey.

Ground snakes coil themselves in a very similar manner to the arboreal species; sometimes, however, they lie with part of the body looped over upon itself, with the head in the middle. When they intend to spring, the body is always drawn well together—coiled up, in fact, but not in the manner usually shown in pictures. When they shoot forward, they support themselves by the tail, rising sometimes almost perpendicularly. They cannot spring from the ground altogether, therefore the radius of their attack is limited to their length, i.e. a snake six feet long cannot reach an object by springing at a greater distance than six feet; but they will move forward and make repeated attacks with great rapidity.

Purely ground snakes, such as the rattlesnake and the moccasin, never ascend trees. I have never heard of their doing so, and they seem incapable of it. Other species never leave the trees. A few species live on the ground, but ascend trees to seek for young birds and eggs, but this seems to be very rare. I have scarcely noticed it in the States; it occurs more frequently in South America.

Every one in America dreads the moccasin snake so much, that I am convinced that it is the most deadly of the snakes found in that country; but it so happens that I have never seen any person or animal bitten by it. On the other hand, I have seen several bitten by the rattlesnake, and I can say positively that the poison of that reptile is not so deadly as is generally believed. My opinion is that if prompt remedies are resorted to, the unfortunate

victim has a fair chance of recovering from the effect of the poison. My first experience of the effect of the bite of a rattlesnake was astonishing. It occurred at an outlying cattle-run in Missouri in June 1872. I had been doing trade with the ranchmen, and there were a considerable number of cowboys, outriders, and blackguards assembled in camp. Among the latter was a thorough-paced tender-foot, who insisted on being known by the sobriquet of "Hell-fire Jack." Indeed, he gave himself no other name, and seemed to live by making extraordinary and outrageous wagers. He amused the rascally cowboys by drinking against time and similar dreadful feats, and I saw him drink a dozen glasses of grog in ten minutes, after which he lay miserably drunk for twice as many hours. When these disgusting exhibitions of his powers of endurance began to pall, he startled us all by offering to bet fifty dollars to a hundred that he would let a rattlesnake bite him and suffer no ill effects from the poison. The boys would have given the money readily enough to see him hang himself for the sake of the excitement, and when they had satisfied themselves that Mr. Sulphur Jack meant what he said without intention of tricking them, the money was collected and staked. A rattlesnake was routed out of a prairie-dog's hole, and Jack bared his left arm. The snake, which was about five feet long, was so frightened that for some time it would not bite him, but strove to escape, sounding its rattles almost continuously. It was not until Jack began to torture it with the point of his knife that it bit him about the middle of the fore-arm. I saw the mark distinctly; two small bluish-looking punctures which did not bleed at all. The snake was then killed, and I ascertained that the poison fangs were perfect.

Jack, immediately after he was bitten, scarified the place with his knife, scraping away the skin until he had made a raw sore the size of a dollar. This he sucked, and allowed to bleed freely, losing, I daresay, seven or

eight ounces of blood. He then washed the wound in whisky, and bound it tight in cloths soaked in the spirit. Afterwards he proceeded to drink a bottle of whisky with much gusto. When he had consumed about half of it, and was fairly drunk, he quarrelled with a cowboy over a game at cards they were playing, and got up to fight it out. In a quarter of an hour he had made a mess of the cowboy, and wanted to fight two others who had deprived him of his six-shooter and knife. He never showed the slightest effects of the poison, and was continuously drunk for four days, at the end of which he relieved us of his presence. It was reported that he showed his rattlesnake-defying feat twice in the neighbourhood within a month, and the last I heard of him was that he had been "made meat of" by a jealous drinking saloon keeper whose wife he had tried to kiss.

Subsequent cases of rattlesnake bites which came under my notice were always treated with whisky, and without doubt this spirit is a specific for the poison. It should be added that the subjects of these cases were all strong, robust men used to an open-air life. But there are some persons who are not affected, or but slightly, with rattlesnake poison; others who, although they do not die, are never well after being bitten, but suffer from a complaint akin to a wasting disease. Of a number of dogs and cattle bitten which were watched by me, a number died quickly, some lingered from two or three days to a fortnight, and a few completely recovered. It is certain that the bite of a rattlesnake, if neglected, is fatal in ten or eleven cases out of twelve.

If you are bitten by a poisonous snake of any kind, immediately draw your knife and cut the flesh containing the punctures completely out, cutting deep. If you have not sufficient nerve to do this, or to permit a comrade to do it for you, squeeze the wound strongly to force out as much of the poison as possible, and suck, unless your lips or tongue have sores upon them. Next tie

the limb tightly *between* the wound and your heart, to check the circulation. This, of itself, is a powerful curb to the action of all kinds of injected poison, and will retard its effects on your system. Wash the wound freely in whisky, and drink strong whisky and water without stint, even until you are intoxicated. Shocking as the advice may seem, it is your best, if not your only, chance of life. You should also chew hot spices or pickles to induce perspiration, and keep on the move, and above all do not give way to fear. If you are attending a companion, do not let him know that he has been bitten by a poisonous snake. Try to deceive him in this matter, and let him think that the remedies applied are simply precautionary. Fear has a remarkable effect in snake-bites, and hastens the lethargic or comatose state which immediately precedes death.

I should follow the course I have here stated in any snake-bite. It might fail in the case of the moccasin-snake, but there is no better remedy known. The ammonia and other remedies used by European surgeons are of small value in most cases. American surgeons, I think, all bind their faith on whisky as the best antidote to snake poison. It is a safe thing to use in all poisoning arising from the bites of noxious reptiles and insects; and, in spite of what those good people, the total abstainers, preach and teach, a strong glass of grog or two will do you no hurt if it does you no good. If you think otherwise, why then there is no cheaper place on earth for funerals than the Southern and the Eastern States. If you happen to die far from a township or "city," ten to one they will not trouble to bury you at all, but leave that task to the turkey-buzzards. And there is no spot where you will be less wept over, unless you have been making love to some pretty yellow gal, who will wish you had not been "sich a tarnation fool" as to "bunk" before marriage.

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But forgive me, reader. This long digression is sadly delaying our exploration of the Okefinoke.

Embarking in a light canoe, the draught of which is but an inch or two, and not forgetting to take our rifle, we make for the recesses of the swamp, paddling cautiously for fear of collision with the submerged cypress-knees and snags. As we approach the moccasin, she opens widely her jaws to intimidate us; and being assured that her young have successfully retired, slips under the dead leaves and follows them.

Probably the next living creature we notice will be the bull-frog, which attracts us on account of its, to our eyes, huge size. There are at least four species of frogs in these swamps, including the largest and smallest of American frogs. The bull-frog is not, however, very abundant, and I have noticed that this frog seems to prefer clear running streams to swamps. It grows to a very great size in the Okefinoke swamp, and sitting up on a snag or mass of moss, it looks like a large stone or boulder. As we approach, however, we notice the exceedingly brilliant eye fixed steadily upon us, and on attempting to touch it, it springs away with an alacrity for which we were quite unprepared, considering its heavy, unwieldy build. It has an enormous head, a thick-set body, and strongly formed limbs, much thicker in proportion than those of the common European frog. Its croak is spoken of as "booming," and is very loud. It can sometimes be heard appearing to come from every part of an extensive district, and from a mile or more distant. I am not sure that the Okefinoke frog is not a distinct variety of the common bull-frog. It is larger than those which I have seen in streams running into the Mississippi and its tributaries, and in other places, and seems to differ in colour, though neither of these circumstances is of much importance. Size may depend on locality and abundance of food, and coloration certainly does. The following are the measurements of the largest specimen that I could find

Length of body from nose to base, 8 inches; breadth across, nearly 5 inches; girth, 14 inches; length of hind-limb, 12½ inches; weight, within a fraction of three pounds. The usual size is about seven inches in length, half as much more for length of hind-limb, and a weight of over two pounds. It is remarkable that so small a snake as the moccasin can swallow a bull-frog whole. Of course the snake is greatly distended by such a meal, and is helpless until it has digested it.

The bull-frog is said to eat small fish. I cannot say this of my own knowledge. They feed on slugs, larvæ, beetles, flies, spawn, water-insects, and other frogs, for I saw a bull-frog one day pounce upon a grasshopper-frog and swallow it in a twinkling, and one that I killed had a dead grasshopper-frog in its stomach. I have also found the comminuted elytra of water-beetles in their stomachs, but no scales or other signs of fish. The prey is swallowed with great rapidity—in a mere flash of time.

The colour of the bull-frog is dusky grey, lighter on the sides and limbs, and lighter still on the under parts; but the same tinge throughout. There are some dark spots on the neck and back, and the hind-limbs have leopard-like markings.

The grasshopper-frog, referred to above, is very abundant in the swamps. It is the smallest frog in the States, being only an inch and a half in length, and weighing less than an ounce. It is greyish-green in colour, with some brown patches and light stripes on the body, and the legs barred with brown. There are discs to the toes, like those of a tree-frog, but its habits do not seem to be arboreal. On the contrary, I have only found it in stagnant swamps and marshes where there was a thick matting of water-plants. They sit on the floating leaves in great numbers, and are very agile, and they make a piping noise, quite unlike the ordinary croaking of a frog. Thousands of them fall a prey to the storks and other aquatic birds, yet there are myriads of them in the Okefinoke Swamp.

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In certain parts of the swamp you may see the tadpoles through the water, swarming on the bottom as thickly as the mosquitoes in the air. I suppose these to be chiefly the tadpoles of the grasshopper-frogs; those of the bull-frogs I could never find.

The other two frogs found in these swamps are of species which I could not identify. They are of medium size and dull colour, and there is nothing remarkable in their habits.

By-the-bye, I have never noticed frogs in swamps which are liable to be overflowed by the sea. Salt is a deadly poison to frogs. A little sprinkled on their backs will cause their death in a few minutes. Slugs also succumb to its outward application, but they will greedily eat the fat of salt bacon. This extraordinary fact shows that animals which naturalists point out to be constructed to feed on a certain kind of food will readily take to quite a different diet, not for expediency only, but as a matter of taste. Slugs are also exceedingly fond of cheese.

We must choose our path carefully in this swamp, for it is frequently so choked with festoons of creepers, and trailing plants, and growth of rank herbs, as to be impassable. There is a sort of moss hanging from the boughs of the trees in elegant streamers (Spanish moss) that is so thick sometimes that it forms a curtain which cannot be penetrated by a canoe—a sort of boat that, I need not remind the reader, is somewhat ticklish to navigate. Many noxious insects and small reptiles lurk in the trees that are so covered, and if the entomologist shakes a mass of this moss, he will be rewarded with a plentiful haul of beetles and moths, to say nothing of other creatures that will resent being disturbed, amongst the foremost of which is a small brown spider, not so large as a pea. The bite of this spider is as sharp as the application of a red-hot needle, and becomes much more inflamed than that of a mosquito. It is very vicious, and will bite five or six

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times in succession if not quickly brushed off, and the inflammation will not subside for a week.

Here, also, there is a convolvulus-like plant, which grows in magnificent profusion, hanging in vast shrouds, which are a mass of beautiful white blossoms. Other splendid flowers are so numerous that a description of them alone would fill a volume; but unfortunately I cannot give their botanical names, or the orders to which they belong. I was much struck by a bell-shaped flower which grew in clusters, like the primrose, generally at the roots of trees. It was the size of a dollar, and of so brilliant an orange colour that from a short distance it looked like sparks of fire shining in the gloom of the swamp. Nor are orchids wanting in these swamps, especially on dead or decaying trees, many of which were covered with them, of forms and colours most beautiful. The Okefinoke has not, I think, been often penetrated: it certainly had not at the time I visited it in 1871 and 1876, and I can assure the lover of Nature, if he is prepared to run the risk of fever, that the farther he forces his way into its gloomy depths, the more remarkable and beautiful will be the forms of animal and vegetable life he will discover. The spot must be, I should think, a very paradise for the botanist, for in no other place in the States have I seen a greater variety of lovely ferns, flowers, and mosses; and that is a bold, but true, statement.

On the outskirts of the swamp you will find shingle-cutters, whose wan and emaciated forms are a sufficient evidence of the unhealthfulness of the place, and these men will tell you dreadful stories of the fever and death they have to face while in pursuit of their calling; but with due precautions and careful living, I think the swamps may be visited without running any great risk. Do not neglect to use quinine daily; do not go to the swamps until you are acclimatised to the country, and do not sleep in their depths, at all events more than one or two nights

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in succession. Keep up your strength by generous feeding, and lie close to a large fire at night.

I have already referred to the vast numbers of mosquitoes met with in the swampy places of the country. In the Okefinoke they sometimes rise in such swarms that the trees are only seen dimly as through a dust-storm. There is a thorn-bush growing in the swamp which gives forth a strong aromatic odour when burned. You may recognise it by its small, white, star-like flowers. If you smother your fire with these bushes, so as to make a dense smoke, and lie to leeward of it, you will have a perfect protection from the mosquitoes, which cannot endure the odour I have mentioned. You will find the odour pleasant to your own nostrils, and a dispeller of less agreeable smells; for there is a peculiar rank smell in the swamp, suggestive of fever or ague. The mosquitoes are most troublesome after sunset, and sting vigorously all night.

A greater number of reptiles may be found in this swamp than in any other spot I know of in the States. In addition to those I have mentioned there are lizards, tortoises, and harmless snakes.

The most remarkable of the lizards is one which I took to be a basilisk, broadly fringed with a membrane down the back, and also for about half the length of the tail, which is very long—about eighteen inches; the creature's body being less than eight.¹ It is very active, running swiftly about the trunks of the trees, preferring those which are decayed, hollow, and have fallen with one end in the water; and they are not easily captured. It is quite harmless, though the shingle-cutters have a different opinion about that. It puffs with its throat when captured, tries hard to escape, and soon dies if kept in captivity; but that may be because I failed to find any food which it would eat. I have seen nearly twenty of the young together, apparently one brood.

¹ See Note B.

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The colour is dark grey, with green and yellowish reflections when in the sunlight. I have not seen this lizard anywhere else in the States, but it is very similar to one which is common in Guiana and Brazil. It is not abundant in the Okefinoke Swamp, and confines itself to certain spots. It takes to the water instantly it perceives the approach of danger.

There are several smaller lizards in the depth of the swamp, all of them remarkable for the great length of their tails and their very active habits. I have noticed that some of these little creatures squeak when seized by the storks. There are also one or two species of water-lizards—newts apparently.

Should we dig in the mud near the centre of the swamp, where there is a sluggish current in the water, it is not improbable that we shall turn up a hellbender, a species of salamander, which is held in utter abhorrence by our friends the shingle-cutters. I heard one of these gentlemen refer to me in the following non-eulogistic terms: "Never tell me that that there monkey-crank ain't in league with the devil. Gawd-a-mighty! I seed him strake a hellbender, and never no hurt come to him."

The reference to my being a monkey-crank, or lunatic, referred to my having half-a-dozen monkeys, procured from ships at New Orleans, in my waggon, one of which usually went about with me clinging round my neck.

The hellbender is as harmless as a frog or toad, or any other causelessly persecuted reptile. It is an absolutely water-hunting species, which I have never seen on dry land. It is more abundant in the Mississippi and the great rivers which run into it than elsewhere, and is scarce in swamps, to which it seems to resort to bury itself in the mud to hibernate, and perhaps to breed. At all events, I have seen the young in the Okefinoke, and they seem to be hatched from the eggs fully developed, which is different from other salamanders, which undergo

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several transformations before attaining full development.

The hellbender is from fifteen to eighteen inches long, and usually weighs about two pounds. It has a somewhat eel-like head, a bulky body, and a flattened tail, adapted to its aquatic life; but it is not a swift swimmer, and is easily captured with the aid of a hand-net. The few that I have handled seemed to be lethargic creatures, and made no resistance to capture, or attempts to bite, in which they also differ from most other salamanders. The colour is grey, with spots and zigzag blotches of darker grey. It burrows in the mud in search of prey as well as to hibernate, and devours every kind of slug, worm, fresh-water shrimp, insect, tadpole, or small fish which it can capture. Its haunts make its habits difficult to study, but I believe I am correct in stating that it lies hid in the mud, with only its head uncovered, for the purpose of surprising the fish as they swim by. I have seen one so lying with a fish in its jaws. The people of the country have a strong prejudice against it, and never lose an opportunity of destroying it.

There are eels in this swamp which do not differ, that I can discover, from the common eels of our ponds and canals. There are eels everywhere, and it is very remarkable that so little is known about a creature that is so common. For hundreds of years arguments were rife as to how eels propagated, and I have heard even educated people declare their opinion that they were produced spontaneously. I am satisfied that they are born alive, and I do not believe the assertion of some naturalists that eels will not breed in fresh water. They are found abundantly in large lakes, ponds, and even ditches, which have no communication with the sea, which are situated in some cases thousands of miles from it, and in which they must certainly breed, as their great numbers prove.

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Eels, like many snakes, are remarkable for their erratic development. Serpents of the boa and python genera, in certain situations, grow to an enormous size, far above the general size of their species. In fact, in certain cases they seem to never cease growing till death. Few people have seen eels exceeding four feet in length; nevertheless, they occasionally grow to over six feet, and I am convinced that there are conger eels so large that no line will hold them; consequently they cannot be captured. I was once in a boat with four men when one of these monsters was dragged to the surface of the water. I should not like to give an estimation of the size of the frightful-looking head, lest I should be thought to exaggerate. It clapped its tail under the boat's bottom, and with a powerful wrench tore itself free, nearly upsetting the boat in so doing.

The tortoises in the Okefinoke Swamp are small fresh-water tortoises, and they are very numerous. It will surprise most persons to learn that they are also very active. They fall a prey, however, to the storks, which are really most voracious birds of prey, bolting almost everything they can get hold of, from moccasin snakes (of which they have not the slightest fear) to mice and young unfledged birds. Where there is a mudbank, slightly sloping upward from the water, you may often see hundreds of tortoises together, basking in the sun. It is strange that cold-blooded animals are all fond of great heat, which is indeed necessary for their existence. There are few reptiles in temperate climates, and those few are of small size, while in tropical countries they swarm, and attain gigantic proportions. Swamp-haunting serpents, and tortoises, and lizards, to which moisture seems to be a necessary of life, will bask all day in fierce sun-heat, which would prostrate a man in an hour. Frogs and toads, however, generally keep closely hid during the heat of the day.

The stork, which has been frequently alluded to in

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the course of this chapter, is the *tantalus* or wood-ibis. The head and neck, like those of a vulture, are destitute of feathers, and are of a dull leaden colour. The bill is long and strongly formed, the plumage snowy-white. There are very great numbers of them in the Okefinokee Swamp, and, as I have said, they swallow anything they can find. If you want specimens, you may capture as many as you desire by means of a hook baited with a lizard, small snake, or piece of meat, or any other bait you may find it convenient to use. The stork is always ravenous and wholly unsuspicuous, and will grab at anything you choose to offer him. They build on the tops of the cypress trees, and there are hundreds of their nests in close proximity, some of them even touching, and forming one huge nest.

I have watched them feeding their young with eels and small snakes; and I should think that they do more than any other bird to keep down the number of alligators, although the turkey-buzzards run them close in this respect. They also destroy young birds, and I have seen a snake-bird attack a stork for robbing its nest, and a sharp battle ensue. I have also seen them in the streams in the country around the swamp fishing, and flying away with fish of two or three pounds weight. The general habits of the birds are lively and very noisy, and you rarely see them in ones or twos. Should you meet with odd ones, you may be quite sure that there are hundreds close at hand.

There are also a few night-herons in the swamp, but they are not numerous; and differ altogether in habits from the storks, being shy and generally silent. I could not ascertain if they bred in the swamps; but doubtless they do.

Neither are the snake-birds, or water-turkeys, as they are frequently called in America, numerous. They are usually met with singly or in pairs, although on one occasion I saw five together. This is the bird called

an *anhinga* in South America; and I was surprised to find it here, as I had hitherto thought that it was confined to that part of the continent. It is, I should think, the most expert of all waterfowl, swimming under the water like a fish and almost as rapidly; indeed, perhaps more rapidly, as it is evidently in pursuit of fish, which it captures beneath the surface. It is difficult to kill, requiring to be hard hit with large shot. If it is only wounded you will never succeed in capturing it, so agile is it in all its movements. The bird must be killed outright or you lose it. I discovered its nest about twenty feet from the ground. As I suffer from an infirmity which prevents my climbing trees, I was obliged to send a negro up to fetch it. The clumsy fellow broke all the eggs. They were covered with a chalky coating, which could be scraped off with the finger-nail, when the shell appeared greenish like that of a duck's egg. The nest was loosely built of dry grass and bents, and was not lined with feathers.

The head and neck of the *anhinga* are remarkably snake-like in make and appearance, whence the popular name of the bird. It has the habit of perching with the body concealed and the neck exposed, and turning from side to side on the watch for prey. It is then frequently mistaken for a snake by inexperienced persons.

A few rails haunt the swamp, but more will be found in the damp meadows near the courses of the rivers and streams in the neighbourhood. It comes forth from its hiding-places about sundown, and is very shy. In colour it is brown with small specks of black and white, and is of delicious flavour. I followed Gilbert White's directions and cooked them "with the ropes in," like a wood-cock. I have found the nest of this rail, but it is generally exceedingly well concealed amidst the rank growth of isolated spots in the marshes. The eggs are numerous, nine, eleven, or thirteen—always an odd number in those nests which I found. It is difficult to convey a correct

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impression of the appearance of birds' eggs by verbal description, owing to the variety of shades of two or three colours. These eggs are about the size of those of a thrush, a light lavender-grey in colour, speckled with three or four shades of brown in spots and small blotches. The nest was large, loose, and made of sedge. It was not properly lined, but there were tufts of cow-hair on the inside in several, out of about a dozen which I examined.

One day I fired at a bird with a long curved bill which I took to be a curlew. It seemed to fall amidst the tall sedge, but could not be found. An American friend told me that he had never heard of a curlew being found in these swamps, but that at rare intervals an odd ibis or two had been seen there. It is a pity that the bird was lost, as it was evidently a chance visitor to the district. Many uncommon birds from time to time visit these swamps, driven thither by stress of weather from the coasts, and I have seen large flocks of gulls feeding on the open parts.

Amongst other birds noticed here, I may mention a species of coot, plentiful enough to be easily found, and at least two distinct kinds of plover, one of which was the piping plover. There are also cranes, swans, geese, and myriads of ducks; but these birds will be described under another heading. The place is a paradise for the wildfowler. Personally I only shot what I wanted, but I have seen the American gunners shoot forty or fifty brace of wild ducks in a day with an ordinary gun. With a heavy wildfowling gun and from a boat or raft, they kill hundreds in a day, which are sent to the towns for sale. My negro servant would sometimes go into the swamp for eggs for our use, and return in an hour or two with as many as he could carry. Many of them, however, would be bad, having been sat on too long. From this it will be seen that ducks breed freely in this swamp.

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Near the middle of the northern part of the swamp there is an underground spring (not the only one to be found in the place), where the water is deep, and so beautifully clear that you can plainly see the bottom of the stream. The water is strongly mineral, and not a fish or reptile can be seen in it, the reason, perhaps, that but few waterfowl frequent the place. The water has the peculiarity of tinging objects dropped into it a bright green colour as they sink, and the bottom looks as if covered with a thin coating of fine powder; but all is beautifully clear and bright. The water bursts out from a steep root-covered bank, at a distance of about eight feet beneath the surface. If you drop a stone into the water at this spot, the force of the current is so great that it will not permit it to drop straight down, but causes it to shoot aside several feet. The force of the rushing water has worn a deep hole: as nearly as I could fathom it (for it is not possible to drop a line straight into it), about sixty feet deep. It appears to be a dangerous spot for bathers, though the temptation to indulge in a plunge is strong: and the water is strongly purgative. Half a tumbler-full is sufficient to make you very ill. So if you penetrate the swamp far enough to find the spot, be cautious. It is worth visiting, the surroundings are so beautiful; for here are the finest masses of creepers, of a hundred different hues, hanging from and interlacing the tall trees. The spring seems to soon lose itself in the swamp, but the surrounding growth is so dense that you cannot follow it a hundred yards.

Except eels there are but very few fish in the waters of these swamps. One of the most remarkable is a small fish about four inches long, with eyes so small that they appear as mere dots. They do not appear, however, to suffer from weakness of sight, for they are very quick in their movements. There are other small fish, like minnows, and others yet smaller, not exceeding an inch in length, but these are not sticklebacks, and may possibly

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be the fry of other fish. I saw no fish of any size except in the bills of storks, which I believed to have been brought from a distance to feed their young.

There are several species of small birds within the compass of the marsh land. Some of these are migratory, and others more numerous in districts to be hereafter described, where it will be more convenient to notice them.

CHAPTER V

A LITTLE ABOUT THE MISSISSIPPI

I SAY "a little about the Mississippi": it must be a little —a mere sketch. To give the reader some idea of how much could be written about the Mississippi, I may mention that I have seen in American bookshops a work entitled "The Mississippi from its Source to the Sea." The work runs from sixteen to twenty large volumes, with innumerable pictures. It may be realised then that but little can be said within the limits of a chapter; yet I am so interested in the Mississippi region that I cannot omit that little.

Who discovered the Mississippi? It matters but little, perhaps, but there are several claimants to that honour. De Salle, a French adventurer, published that he was the first to embark upon its waters, but Father Hennepin, a Franciscan priest of Spanish nationality, claims to have followed the river from its source to the sea several years previously, and says he held his tongue for fear of De Salle. Hennepin, on his own showing, was a daring, cunning priest, none too truthful, and with an immense estimation of his own importance and the value of his discoveries. I cannot make up my mind whether his narrative is to be depended on, but it is certain that as early as 1680 he was well acquainted with the course of the Mississippi. If he actually followed it to the outlet to the sea, it is astonishing that De Salle and the early navigators failed to discover the mouth of the Mississippi, which they did owing to a very remarkable fact. If you dip up a tumbler-full of the water below the junction

of the Missouri (which is the larger river of the two), and let it stand a short time, you will find nearly an inch of deposited mud in the bottom of the glass. So great is the quantity of soil held in solution in the Mississippi waters, that the river has formed, in the course of countless ages, a delta of mud many hundreds of miles in extent. This delta shoots out in the form of numerous small peninsulas, forming innumerable creeks. One of these peninsulas runs far out to sea, and splits, at its head, into four forks, each of which is traversed by a mouth of the Mississippi known as "The Passes." No person could ever imagine that a great river could empty itself through such extraordinary channels; so, for many years, navigators avoided this narrow mud peninsula, and went poking about among the creeks seeking for an entrance into the great river.

I went to see the source of the Mississippi for the first time in 1867. This is what I saw as well as I have the power to describe it. A marshy lake, which appeared to the eye to be some five miles across. There were several islands in it, covered with bushes and trees, here and there a pine among them. In the foreground the same class of vegetation, pines being scattered among the other trees, and not growing in woods. In the distance a line of hills, apparently covered with forests, but not rising to a great height. The ground in the neighbourhood of the lake marshy, with clumps of trees and a thick growth of reeds. A string of herons was rising from the middle of the lake, and a dense crowd of ducks from farther off. These and a few pigeons in the trees were the only living creatures that I noticed. The water was evidently very shallow for a long way out from the banks, and thickly choked with reeds and tall grass. This was the celebrated Lake Itasca, the source of the Mississippi, or Father of Rivers, which is the literal interpretation of the Indian word. The scene was pretty and wild, but not striking; and this, my first

view of it, caused me some disappointment, as it did not by any means come up to what I had expected. The time had something to do, no doubt, with the doubtful impression of the scenery. I had been gradually approaching the country for several days in dreadful weather—dull and stormy, with heavy rain. The day previously to reaching Itasca had been damp and extremely misty, so that little of the country could be seen. The next day was clear but dark, and under such circumstances no scenery shows at its best.

I soon discovered that, whatever might be thought of the scenery, the district was one which could not fail to be extremely interesting to the naturalist. Not only did waterfowl abound, but there were here a greater number of small birds than I had found in most wild outlying districts of the States, to say nothing of several rare animals and deer; and subsequently I found the whole region of the Upper Mississippi one of the richest fields for the investigation of Nature, and I recommend no naturalist who may visit America to neglect to pay it a visit.

A little to the right of Itasca is a much smaller sheet of water, Lake Ibsawa, which is, I should say, less than two miles across, but which otherwise resembles the larger lake. From each of these lakes there issues a small stream running almost *due north*, quite the contrary to the course the Mississippi afterwards takes. These two streams meander full sixty miles, enclosing a great stretch of country, before they join, and, forming one river, enter Lake Travers, a larger sheet of water than Itasca, the surface of which I have heard estimated at seventy square miles. The water rushes from the eastern side of Lake Travers and enters two more lakes, Cass and Winnipeg, all of the same general features. After leaving Lake Winnipeg the Mississippi waters flow south with a very swift current, but throughout its entire course of about 3260 miles there is but one

interruption to its navigation by boat or small craft—the falls of St. Anthony, formerly a sacred place to the Red Indians, now the site of the American city of the same name. The falls are about 600 miles from the source of the river, and have been spoilt by being converted into "power" for manufacturing purposes. The Indians used to hang valuable furs and other presents on the trees overhanging these waters as a propitiation to the evil spirits supposed to haunt the spot. These were not unfrequently stolen by the evil spirits of civilisation. I do not know in what condition the falls are at present under their *improved* state, but formerly they fell about fifty feet, and were divided in the middle by a large pyramidal-shaped rock. Many accidents occurred there to canoe parties of the Indians, the reason, I suppose, that they imagined the place to be haunted and held it in such awe.

The upper reaches of the Mississippi run through an exceedingly picturesque and beautiful country. The banks of the river are occupied by hills, most of them gently sloping, and covered with clumps of fine trees. The country farther inland has the appearance of a finely-timbered park, and at the time I saw it there were still herds of bison wandering about it, and adding to the beauty of the scenery. The banks of the tributary streams were clothed with timber so uniformly that the trees had the appearance of having been planted by hand, yet nowhere had the uniformity an objectionable formality or stiffness. In the course of the Mississippi itself there are a great number of islands, in the upper courses especially, so closely placed and knit together with wild vines, forming a network from tree to tree, that in some places it was necessary to cut a way for the boat between them. In the autumn these vines are laden with immense quantities of very good fruit, and there are many other fruits, such as plums and apricots, growing wild, while in the shallows and lakes

of the head-waters vast fields of wild rice grow. Sometimes, where the lake is very shallow, not exceeding a few feet in depth, the entire surface is covered with this wild rice, and you seem to be looking over a corn-field. It is very long in the grain, and attracts myriads of ducks and other wildfowl. Until you get some hundreds of miles from the Itasca Lake the whole country (Minnesota) may be described as a huge marsh, and this wild rice is so abundant that it must formerly have afforded a valuable food supply to the Indians.

It was on the banks of the Mississippi that I first became acquainted with the rattlesnake, and that under circumstances sufficiently startling to make a deep impression on my mind. I had landed on the right bank, a few miles below the junction of the Des Moines, at a spot where the reeds had been cleared by some previous visitant, and, after enjoying a good meal, sat down with my back to a tree to read. Suddenly I felt something creeping over my extremities, and looking up quickly, saw a rattlesnake glide across my outstretched legs. Most fortunately I was too much startled to move, and the reptile went quietly and quickly on his way, disappearing amongst the tall grass. Had I made any movement I should probably have been bitten. This particular snake was afterwards found by my servant and killed. It was four feet long, and had nine rings or "rattles" on its tail. We found no others near this spot, but farther down the river, and some distance away from its brink, we found many—some of them much bigger than the one which had startled me.

The rattlesnake, like most other snakes, and indeed wild creatures in general, never voluntarily attacks man, but always tries to get away. If threatened, it first resorts to its rattle, and tries to intimidate and frighten away its foe by sounding it. It is only when driven to extremities, or suddenly trodden upon, that it springs up

and bites. It is a much and justly dreaded snake, but its poison is not so deadly as is generally imagined. It seems to me that some constitutions are impervious to its action, and many bitten persons are saved by timely resort to the proper remedies. There are other poisonous snakes much more deadly than the rattlesnake, dangerous though it be.

The "rattle" is a substitute for vocal organs, for the rattlesnake cannot hiss like other serpents. Neither can it sound its rattle when it is creeping along; at all events it never does do so. It is when the creature is coiled up and stationary that it makes the sound which is intended to warn its enemies to keep off from it, just as is the hiss of other snakes. It is a sort of threat or intimidation. The rattle is a coil of hollow rings, much like the human finger-nail in substance, and they appear to be sounded by rubbing together, or alternate contraction and extension. They are not sounded, as some persons have asserted, by rubbing on the ground, against the grass, or any other foreign substance, but are entirely under the animal's volition.

Old rattlesnakes have many rings and young ones few, but the rings of the rattle are no evidence of age. Thus, I killed a rattlesnake only seventeen inches in length, which must, therefore, have been very young, yet it had seven rings to its rattle. Twenty rattles is the greatest number that I have heard of, and so great a number is rarely met with. The average is about fifteen in a full-grown snake. Sometimes a ring is added every year; sometimes two or three, and sometimes none. The largest rattlesnake that I have seen but slightly exceeded eight feet; but reliable travellers and trappers say they have seen them more than eight feet long. When I first went to the States, rattlesnakes were plentiful in districts where one could not be found twenty years after. The inhabitants never lose the opportunity of destroying so dangerous a pest; they are consequently being exter-

minated, and fine specimens are annually becoming rarer or more difficult to find.

When snake-poison begins to act on the animal system, it has a soporific effect. This seems to point to the poison being for the purpose of enabling the snake to overcome the struggles of its prey. At all events, after being bitten, the victim almost instantly becomes quiescent. Snakes which have no poison glands, if large, smother their prey (not crush it); if small, usually live on very insignificant fry—such as worms, slugs, young unfledged birds—which cannot resist, and eggs. Some terrible snakes are large and strong as well as poisonous, but these, fortunately, are rare even in their own peculiar country.

I may mention a circumstance of interest that seems to throw some light on the suggestion that poison is given to certain classes of snakes to enable them to overcome the struggles of their prey. I have found poisonous and also constricting snakes, which, after gorging their prey, were more than double their normal girth; so bloated, indeed, as to be helpless and incapable of defending themselves. Small harmless snakes are never in this condition, but are always quick and active; proving that they do not prey on creatures of any size. These observations were made on American snakes only, but doubtless are applicable to all serpents.

I have mentioned storks and buzzards as attacking poisonous snakes for the purpose of preying on them. The former swallow the snakes whole, and though the buzzards may tear them to pieces, they eat the head with the rest of the body. This is very remarkable. Suppose the fangs should wound the mouth, throat, or any of the internal organs, the death of the bird must ensue. It is evident, therefore, that the fangs pass through the bird's body without injuring it; yet they are nearly as sharp as needle-points. Truly the provisions of Nature are exceedingly wonderful!

All wild creatures, more or less, seem to fear snakes ; but the sight of the latter causes fear-paralysis to some small animals and birds which deprives them of the power of flying from their enemy. Hence, I suppose, has arisen the supposition that some snakes fascinate their victims, a faculty which they do not possess. Many tree-snakes, and particularly a small species in Brazil, upon coming suddenly on their victims, cause the same sort of fear in them that you may observe in rabbits and hares in England when pursued by stoats or weasels ; but as to fascinating them from a distance and causing them to approach by fixing them with their brilliant eyes, I have never seen the slightest approach to such a thing.

As an apology for having so much to say about serpents, I may state that I have made a particular study of them for several reasons, the chief of which were : to ascertain the truth of old stories about the enormous size to which they are said to have formerly grown, their still more enormous powers of crushing their victims, and the strength and deadliness of their poison fangs.

I hate ridicule. It is the most offensive form of criticism to which ignorant critics can resort, and they know it ; but it is the most effective screen to their want of knowledge of their subject. Many statements of travellers that at first sight seem supremely ridiculous have a great deal of truth in them ; but it is sometimes difficult to suppress a smile when we read the accounts of old voyagers on the Mississippi gravely recording that "devils" and "sirens" suddenly rose from the waters and confronted them.

More than two hundred years ago Father Marquette, a French priest, while travelling down the Mississippi, gravely assures us that "a horrible monster" rose before him. "I plainly saw it," says the Father. "It had the face of a man with a short beard, and the body of a

woman. It grinned horribly at me, and then disappeared beneath the waters." Nor is Father Marquette the only old writer who has left a note of having seen this extraordinary "devil" or "siren," as it is interchangeably called by them, and all agree as to the horribleness of its appearance.

It is clear that it was a manati, or a seal, that these easily alarmed travellers came across. I am inclined to think that it was the former; for, while making an excavation on a small islet in the Mississippi, not more than eighty or ninety miles below the falls of St. Anthony, I came across the bones of such an animal, which appeared to me to be identical in species with the Amazonian manati. This animal has, however, now disappeared from the Mississippi; though, if the information I gathered as the result of many inquiries is to be relied on, this or a similar species was occasionally seen in the lower reaches of the river as late as the year 1875 or 1876. The skeleton of which I have spoken was that of an animal ten or eleven feet long. It was buried in alluvial soil, and was scarcely two feet beneath the surface of the ground. Some of the bones, including a part of the skull, were missing; but there is no doubt of their being the remains of a manati.

During this journey down the Mississippi I became acquainted for the first time with many animals that are rapidly becoming extinct, or at least very rare, on the North American continent. Amongst others that I met with on the banks of this mighty river, was the puma. I surprised two of them about a mile from the river, a male and a female, the latter evidently heavy with young. As this was at the latter end of August, we may surmise that the cubs are dropped about that time in this part of North America. The male was sitting up on his haunches just like a domestic cat, and passing his paws over his whiskers with great fastidiousness. The female was rolling on her back and making playful

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clutches at the long bending grass. Unfortunately they became aware of my presence before I had watched them long, and bounded quickly away. The male made a momentary pause and looked back, apparently to see if I were following, then went after his partner with a sort of galloping motion. These beasts were about the size of large dogs, and of very similar colour to lions. Indeed, the early travellers called them lions, and I am not surprised at it, for they have just the appearance of small maneless lions. The trappers insist on calling them "painters" (panthers), and puma is said to be the South American Indian name for them. The North American Indian name is Ma-chib-a-chee.¹ I have divided the word into syllables to show the pronunciation. They were formerly found all over the American continent, from farther north than Canada to the Straits of Magellan. Even now they wander over the greatest part of that vast area, and there are few places in South America where they cannot be found in greater or fewer numbers.

Pumas bear the reputation of being harmless animals, and I have certainly never known one to make an unprovoked attack upon man. But then it is exceedingly rare for any wild animal to meddle with man—they all try to avoid him. The stories of their permitting the hunters to ride up and brain them are sheer humbug. Wounded and surrounded, they will fight as desperately and viciously as any other cat. Only two or three years since the English newspapers reported the case of two young Englishmen, in one of the Southern States, who had robbed a puma of her young, being attacked by the mother. She killed the pair of them, and I can narrate other authentic instances of hunters and others who have meddled with pumas to their cost. In the early days of my sojourn in the States I was well acquainted with a trapper named

¹ The name, however, differs among different tribes.

Joseph Merrimee, a Texan, who walked with a limp in consequence of having been mauled by a puma. In the encounter another trapper lost his life. They had wounded the puma and lost it, and while searching a patch of rocky bush, the brute suddenly rushed from its concealment and clawed the face of Merrimee's companion, tearing out an eye and causing his under lip to hang down over his chin. Merrimee shot it for the third time, all the balls passing clean through it, yet it turned before it died and ripped the calf of Merrimee's left leg to ribbons. His companion died from his injuries. So it is well not to presume on the puma's supposed harmlessness. At the same time Merrimee agreed with other trappers, that the puma is never the aggressor.

Although the puma is so widespread and very numerous in some districts, it does not seem to have more than two young ones at a birth. I have repeatedly seen that number with the mother—never more. Occasionally she had but a single young one with her. The trappers declare that she separates from the male before she drops her cubs, and zealously guards their hiding-place from him, but I have seen both parents with the cubs when they were still very young, and the parents together but a very short time before the female must have become a mother. My opinion is that a pair keep together for life, for if you find one, you will almost always find another in the neighbourhood, and they will be male and female. In South America, however, in the districts I visited, odd pumas were the rule rather than the exception. I never anywhere saw more than four, two old and two young, together, but their cries at night sometimes revealed that there were at least a dozen within half a mile of our camping-place. This was in Brazil, not the States, where I seldom heard the animal, though I knew it was lurking at hand. There is much contradictory opinion about the cry of the

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puma. Some insist that it is a silent animal, seldom uttering a sound; others represent that it invariably roars at night. The truth is that it occasionally gets a noisy fit on it, especially when, like the domestic cat, it has a little courting to do. Then it is howling and crying all night long, and, like grimalkin, is an intolerable nuisance to the traveller. They quarrel among themselves too, and fight like demons. You may often see the hides of old males much scored with cicatrices from scratches received in these affrays. They also spit and hiss just like the cat, when wounded, or their retreat is cut off. But when hunting, or on the watch for prey, they are as silent as death. They have no enemies but man,¹ the reason, I think, that they have become so widely spread over the continent. In Brazil I have heard them night after night crying in the forests without ever seeing one. Having once heard the cry you cannot be mistaken about it, but I have known some novices deceived by the howling of a monkey in South America, supposing it to be a variation of the puma's cry.

I have often had young pumas in my possession, but I never succeeded in rearing one. They usually died within a few days of being captured. One, which was supposed to be three months old, was so savage that it had to be destroyed. It killed several other pets, and when confined made such a terrible outcry that it could not be tolerated within the narrow confines of a waggon. The tail of a puma seems to me to be very long in proportion to the size of the animal. It is usually quite three-fourths the length of the body, and is not tufted at the end, though the hair of the tail is long throughout. The length of the animal's body is about forty-four or forty-five inches from the snout to the root of the tail. Old males are sometimes

¹ Perhaps they have occasional encounters with jaguars in South America.

an inch or two longer. Females often do not exceed three feet in length.

The young have distinct dark marks on the fur, like those of the spotted members of the cat family, which marks gradually disappear as the animal increases in age until the skin becomes entirely self-coloured. All those that came into my possession were found in holes in rocks or banks of earth, which were well concealed from observation, and littered with the bones of animals, varying in size from those of deer to those of mammals scarcely bigger than a rat, and also with the feathers and bones of birds, of which those of grouse and wild turkeys predominated. Some hunters say that pumas lurk in hollow trees and bring forth their young there. I never observed this myself, nor did I ever see a puma in a tree. In this respect their habits seem to me to markedly differ from those of jaguars, which occupy many of the districts in which pumas are found. The jaguar is much the more stealthy and dangerous animal of the two, but no instance of unprovoked attack from either animal ever came under my notice.¹ Both animals try to escape when wounded as a general rule, but the robbing them of their young is attended with great risk, as then the females become so furious as to be blind to danger.

Several times I found shrew-mice in the woods near the Mississippi, but these little creatures do not seem to be very plentiful there. I never saw them running about on the ground, and should perhaps not mention them here but for the fact that, while searching for objects of interest, I broke open a decayed tree trunk which was rotting on the ground, and found it full of those pretty little mice. They had been breeding in company, for there were dozens of nests, containing collectively many more than a hundred young. The old ones were so quick that I could not catch any of them.

¹ The inhabitants of South America, however, hold a contrary opinion, and everywhere greatly dread the jaguar.

In these woods I also found opossums hanging from the branches of the trees by their prehensile tails. They appeared to be asleep when surprised, but quickly made off when thrown at. When one was shot, it hung suspended for a long time though quite dead.

Wild turkeys are still met with on the banks of some parts of the Mississippi, but the navigation of the river by craft of all kinds and sizes is now so great that it has become a poor place for the naturalist to pursue his studies in peace and quietness, especially in the lower reaches, where great ships and steamers are continuously passing, and fishing-boats plying their craft.

There are still abundance of fish in this great river, but if the accounts of old travellers are correct, there must have been many more in past days, and some of these fish are of great size. The bald or fishing eagle is frequently referred to by these same old travellers in terms that show it must have been very common. I have seen it myself hovering over the waters, but only occasionally. It may, however, be more abundant than I had the means of ascertaining, for my journey over parts of the river was somewhat hurried. I saw one one day with a large and very peculiar-looking fish in its clutches. Upon being fired at, it dropped the fish, which fell close to the river's brink, and proved to be a beaked sturgeon. The snout of this extraordinary fish was prolonged into a broad, flat beak, three inches broad and fifteen long, the length of the fish being thirty-three inches. The small eyes were situated at the base of the beak, and the lower jaw actually did not extend beyond the line of the eyes, a circumstance quite unique in my experience of any other animal.

The beak of this remarkable creature was hard and horny in the centre, but became softer toward its margins, where it was quite soft and easily bent. Its use can only be conjectured, and I suppose that it is used by the fish to dig in the mud in search of food. I saw several

of these fish afterwards captured in the nets of fishermen, and noticed that there was considerable difference in the length of the beaks. The smaller fish had the longest; sometimes the beak being as much as a third of the entire length of the body. In the largest fish it was barely a fourth of the entire length. The fish itself was from three to six feet long. The flesh is good eating, and I have seen them exposed for sale at New Orleans and several other towns on the Mississippi. Whatever the uses of the beak, it certainly does not serve the purposes of a weapon; it is too soft at the edge for that.

Another curious fish which I have seen taken in the nets of the Mississippi fishermen is the gar-pike; but this fish differs altogether from the gar-pike of English waters. It has not the long, slender beak of our gar-pike, but much resembles the common pike in general outline, except that the body is more rounded. It is, however, covered with long scales of a rectangular shape, and the mouth is full of large and sharp teeth. The eye of the gar-pike is somewhat small for the size of the fish, and situated close to the gape of the jaws. The largest gar-pikes which I saw did not reach four feet in length, but I was told that they grow much larger. I never succeeded in catching either these fish or the beaked sturgeon, though I often tried. Gar-pikes can, however, be captured with a hook and line.

As high up as four hundred miles from the mouth of the Mississippi I saw a dolphin of the common species. Perhaps its presence was accidental, for though I kept a sharp look-out I saw no more. Near the mouth of the river many porpoises were gambolling, and flocks of pelicans flying over the reedy marshes like gulls. Pelicans breed in vast numbers in the delta of the Mississippi, and so do innumerable other waterfowl.

In the lower reaches of the Mississippi the tarpon, or king-herring, is often met with. It is the largest of all American fresh-water fish, growing to a length of seven

or eight feet, and weighing sometimes much more than two hundredweight, yet it is captured with a rod and line without any great difficulty. Ladies sometimes capture them, and one fair American sportswoman (Mrs. Porter, if I remember her name correctly) had quite a reputation for her success in this exciting sport.

The king-herring does not show much fight, and the pleasure of taking him depends mostly on the natural excitement engendered by overcoming and securing such a vast creature. He soon tires, and is not at all tenacious of life. It is customary to follow the sport from a boat, and when he has been played alongside of it the boatman leans over and gives him the *coup-de-grâce*. Tarpon steaks are considered a dainty, and it is a recognised dish at all the hotels in the Southern States.

I could gain but little information as to the habits of the tarpon. Roughly it has the appearance of a gigantic herring covered with enormous silvery scales; but the body is more rounded than that of a herring, and needless to say the two fish are of quite distinct families. The tarpon is of sluggish habits and preys upon other fish. One which I captured after many tries had several cod in its stomach, and other fish, all of small size. It is not a free feeder, and you may go day after day to the spots where you know they are lurking without succeeding in taking one. In after years I met with this fish, or a variety of it, in South American waters, where it grows to an enormous size. I have seen them exceeding fourteen feet in length and weighing four hundredweight. Yet these monsters are also easily taken with a rod and line.

Of the river itself I fear to begin to write, lest I should not know when to stop. It is a truly grand body of water. Although Lake Itasca is universally received as its source, the head-waters of the Missouri are the real sources of its vast tides. This latter source increases its length by 1200 miles, making the entire length 4370 miles, including, of course, all its windings, which are

very many and very abrupt, insomuch that sometimes a canal cut through less than a mile of ground would save a tortuous wind of nearly forty miles. The banks are often much hidden by vast fields of reeds, which make it difficult to judge its width, especially as the banks are frequently flooded; but judging by the eye, it appeared everywhere at least a mile wide below the junction of the Wisconsin River, and often nearer two, while the depth was very great. I often failed to find the bottom with a line of two hundred feet, the longest I had with me. Formerly the waters of the Upper Mississippi must have been remarkably pure and clear. They are very good even now; but the number of towns and villages on its banks, and the incessant navigation, have naturally done a great deal towards polluting it. There are said to be nearly 2000 steamers alone constantly navigating the great river and its many tributaries, a fact which speaks for itself, while the same waters drain about a million and a half square miles of territory.

Below the junction of the Missouri the river is a rolling torrent of mud. The earth washed down in solution is said, with the débris also borne down to the sea, to be sufficient to annually form an island three square miles in extent and a hundred feet in height. This fact will enable the reader to form a better idea of the magnitude of this mighty river than any amount of description. Forests do not come down to the water's edge, but on the eastern banks there are some extensive woods in certain places. On the western banks the trees are arranged, where left in a state of Nature, in belts, and farther inland in park-like clumps.

Among the vegetable wonders I noticed I have already alluded to the wild vines. There is another vine interlacing the trees with a thick rope-like stem, which bears a kind of bean, excellent for food. I particularly noticed this vine in the woods on the east bank of the river below the junction of the Ohio, and on the islands which

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dot its surface. The banks, of course, are in many places cleared and cultivated, and every now and then the voyager sees huge piles of warehouses, factories, wharves, and landing stages. But still there are spots where the banks appear much as we may imagine they were two or three hundred years ago, while many of the bayous, as they are called, near its mouth, have probably never been penetrated by man, and perhaps never will be, so lonely, desert, muddy, and reed-hidden are they.

Just a word to oarsmen. If you want a good, long, and thoroughly enjoyable holiday, pull yourself, with a trusty companion, from the source to the mouth of the Mississippi, or simply run down the upper reaches of the river, say as far as Alton or St. Louis. The voyage has been done over and over again in a canoe, which you can purchase for a song; but I recommend a lightly built boat, especially if you have much luggage to carry with you. You can get such a boat put together at any township on the river. There are many side streams and rivers up which you can run if you have the time, and in which you will get something more than glimpses of a terrestrial paradise. You can camp anywhere or everywhere; and be assured of this, that wherever you find a human habitation, humble or stately, there you are sure of a warm-hearted welcome and hospitality. The cost of such a holiday need not be more than what is often spent in a month's or six weeks' sojourn on the hackneyed Continent.

CHAPTER VI

SPIDERS AND FLIES

SOME things you meet everywhere. A lady (she was a Scotch lady too) once assured me that if there are two men in the moon, one of them is a Scotsman. I don't object; I am always glad to meet Sandy. He is sometimes eccentric, but always a right good-hearted fellow, and I would find room for him in my boat any day, even were that boat as narrow as the moon's disc. But there are other things besides Scots that are ubiquitous, and far less welcome. Mus, the house-fly, for instance. He does not travel as far north or as far south perhaps as the gnat, otherwise mosquito, but he makes up for that by insisting on a joint occupation of every square yard of this earth's surface that presumptuous man dares to "collar." There are spots, even in the Southern States, which the gnat never invades; not so musca. He forces his beastly presence (like man) into every spot that is not so cold as to terminate his existence. 'Tis positively marvellous, but there are house-flies everywhere that man dwells. I have been assured by naturalists and others that the common house-fly is well known in every inhabited part of the world. I know that he is found in every part of the American continent except the extreme north and south. He seems to follow man from love or hate—which?

The greater part of this chapter hangs upon a very trivial incident. For a time I occupied a house in New Orleans. Everybody has a house in New Orleans; they are so plentiful that lodgings are scarcely to be

had. Sitting one day in bachelor loneliness, I observed a wasp in the window killing flies. The rascal was running up and down the glass-panes seizing the flies, shearing off their legs and wings, and letting the bodies drop. He nipped off the head only of one fly, and I noticed that it spread out its wings as it dropped, and ran about the table for some time before it died. Its actions were such as to induce me to believe that the centre of intelligence in flies is not situated in the head —in other words, in the brain, if they have a brain, a point I think disputable. This fly without a head made several attempts to fly, ran about briskly, and several times made a buzzing noise, showing that most of its senses were still under its control. It was lively for ten minutes, and died very slowly. The head, therefore, is not of the same importance to a fly that it is to the higher classed (I will not say organised) animals. This discovery led me to give some attention to the organisation of insects, and to house-flies in particular, with this result: that I believe the nerve-centre of flies and insects, properly so called, in general, is situated in the back or shoulders between the wings.

I do not think that the house-fly has a brain of similar organisation to that found in vertebrate animals, but it certainly has a nerve-ganglion, and this nerve-ganglion is situated in the thorax, and is the throne of several highly developed senses. The fly has the power of taste, for instance, in great perfection, and (smile not) a sense of humour or fun, thus showing a power of thought. Nearly all, if indeed not all, animals *think*. The theologian, whose theology is mostly based on false deductions from fancies, not facts, may dispute this assertion; the naturalist will not. Terrible as the fact may seem to many persons, so strong is the prejudice of race, the pride of caste (for that is really what it is), a full-grown rat is a far more intelligent animal, with greater power of thought, than a human infant. A

child during the first few months of its existence possesses little or no mental attribute except *instinct*; its subsequent intelligence is the result of education—an education to a great extent unconsciously acquired from its surroundings. There are savages on the earth who are only one degree removed from wild beasts. They may be capable of a great degree of instruction, but many generations must elapse before they could acquire the polish and refinement of civilisation. I doubt whether the instincts of the savage would be eliminated from the minds of the descendants of those people until the tenth or twelfth generation. It is true that none of the lower animals could ever be educated up to the standard of the human animal, but they can be greatly influenced in several ways, and it is equally certain that a slug or a centipede could never be educated up to the intelligence of an elephant, a horse, or a dog. Yet the gulf between the intelligence of a slug and an elephant is immeasurably greater than it is between an elephant and a man. This is where the error of the theologian comes in. He claims that intelligence, that is, reasoning power, is the gift of God to man—*instinct* His gift to the lower animals; whereas it is the *quantity*, not the *quality* of the gift that man has to boast of. Reason and instinct are given alike to all animals, including man, but in *varying* and *limited* quantities. All animals have the power, through the influence of education, of improving their mental powers to a certain point, but not beyond it. Man is quite as limited in this respect as the elephant or the slug. The dog cannot raise his intelligence to the standard of man's, nor man his to that of God; but that is no evidence that the gift of the latter to the two former is not alike in kind, though differing enormously in quantity. But prejudice stands blindly in the way and prevents a true conception of this matter.

I cannot resist telling a little anecdote here as an

illustration of an involuntary fall from the sublime to the ridiculous. Often I found the people in isolated districts of the States affected with a great thirst for knowledge, and often they did me the honour to suppose that I could enlighten them on many scientific subjects—natural history in particular—and the little collections it was my hobby to make were many times exhibited to an enthusiastic, but remarkable, crowd of admirers. Sometimes I was asked to give a lecture. On one such occasion the audience, consisting for the most part of cow-punchers and rough-riders, assembled in a farmer's cabin to hear me explain the modern ideas of the "origin of species" and "the descent of man." I did my best to treat the subject in a popular and interesting manner, and flattered myself that I thoroughly secured the attention of my audience. There was dead silence and open-mouthed wonder as I unfolded the marvels of evolution, until suddenly the farmer's little boy, aged about ten, who had been squatting between his father's legs gazing up into my face with riveted attention, rose to his feet, and, holding up one hand, exclaimed, "If you please, sir, there's a mosquito on your nose."

To get back to the house-fly. I have studied him well, but he is a loathsome little wretch, whom I detest even more than the irritating gnat. I do not think that I am going too far when I express my belief that if all the house-flies in the world could be exterminated, the average of human life would be nearly doubled. All, or at least the greater number of contagious and epidemic diseases would probably then die out, for virus is a prime factor in propagating them. In all manner of filth and putridity house-flies cluster, in the slime and out-casting of the diseased and dying, and straight-way carry the contagion to the persons and food of the healthful and the strong to breed fresh death.

In the summer of 1880 I was travelling in Arizona when we came upon the body of a man lying by the

roadside. He had been dead probably two or three days, and the corpse was a seething black mass of flies—shiny green-flies and common house-flies, for the house-fly is by no means confined to homesteads. No wild beast had been near this poor creature, nor had the birds of prey found him; yet already, between the beetles and the flies, his features were eaten away, and I doubt if his mother could have recognised him. He had probably died a natural death, or perhaps of starvation or thirst. Such things happen. I mention the incident to show the ubiquity of the house-fly, for I am not aware that there was a human habitation within fifty miles of the spot where he lay.¹

At New Orleans, and other towns in the Southern States, the flies are an intolerable nuisance; nor are they, as in some countries, less pestiferous in coast towns than in inland places. Not a piece of meat can be kept sweet for an hour, and they will actually pitch upon fruit, or anything sweet, as you lift it to your mouth. They are continually flying into your eyes and otherwise annoying you. Anything placed on the tables is black with them in a moment, and my irritation used at last to get so strong that I would seize a newspaper, fold it up, and bang the lives out of them by fifties. This trick took the fancy greatly of the cowboys up-country, and it was sometimes laughable to see a score of muscular giants, each with a tightly folded newspaper, banging away at the flies. But if we got any relief, it was but temporary. The place of every fly killed seemed to be presently occupied by a dozen new-comers.

It is strange that the fly propagates in such immense numbers, for it has many enemies, and is not at all so prolific as many other insects that are not so troublesome or frequently met with. Besides spiders and wasps, which kill a great number, and man, who poisons

¹ He was probably a "mean White" or tramp.

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them by the million, they are subject to a disease which destroys millions more, yet they never seem to decrease in numbers. Some years, when the weather is extraordinarily dull and cloudy, which years appear to me to occur once in every twelve or thirteen, flies are less abundant than usual, but this unusual state of the weather is the only thing that seems to influence their numbers.

I have never found more than about thirty eggs in the body of a female house-fly, often not more than a dozen, but they appear to breed four or five times in the course of a summer. I take it, therefore, that each pair of flies produces from 60 to 150 others annually. The eggs (which would more properly be called nits) are maggot-shaped bodies, which come to life, under favourable circumstances, with marvellous rapidity. In warm, thundery weather I have known them become lively maggots within six hours of being deposited. They are deposited by the female by preference on meat, especially putrid meat, next on the carcasses of animals and birds of all kinds and sizes. I have found them on dead snakes, lizards, frogs, and fish. Excrement is also a favourite substance on which to deposit them, especially that of dogs and human beings, but I have never found them on horse or cow dung, which latter is greatly frequented by beetles, the reason perhaps that flies eschew it. Occasionally flies lay their nits on less offensive substances—cheese and meal for instance, but these substances are more frequented by insects whose peculiar province it is to breed in them. As a passing remark, I may mention that a novice examining house-flies would be very apt to confound the sexes, and mistake the female for the male fly. She is furnished with an ovipositor which greatly resembles the male organ of generation, a fact that is not mentioned in any account of *musca* that I have read. Nevertheless it is not a true ovipositor,

inasmuch as it cannot pierce the skin of any creature or other substance.

The "blowing" of meat by flies greatly hastens its decomposition. How this should be, or in what way it takes place, whether from the mere fact that the nits are laid on it, or whether the fly actually brings putrescent matter to the meat, I cannot tell; but the fact remains that meat which would remain sweet for many hours becomes putrid in an hour or two after being visited by flies.

Flies are found everywhere, out of doors as well as in the house. In bad weather they are driven indoors in increased numbers, and rain is responsible for destroying many of them, yet during thundery weather they are more active and oppressive than at other times. Where they hide during winter is a mystery to me. I find it recorded in books that they conceal themselves behind pictures, wainscoting and the like, but I have never been able to find them in such positions; and though on fine, warm days in winter a few will occasionally appear, I have never yet found anybody who could guide me to their hiding-place.

The proboscis of the house-fly is a sucker, and it lives entirely by suction, being incapable of swallowing anything of a solid nature. But there is nothing from which it does not derive nourishment, however dry the substance may appear to our eyes. Bread, butter, bacon, the juices of meat, and fruits, sugar, and milk are its favourite articles of food. It also drinks water, spirits, and beer, and they may often be seen helplessly drunk in drinking-shops. The sucker is furnished with two rough, lip-like corrugations at the orifice, with which the fly can abrade the surface of any substance upon which it wishes to feed, seemingly with the object of increasing the flow of the juices. It will sometimes abrade the human skin until the blood

flows, and I have seen flies gorge themselves with blood from the back of the hand.

It is, or was, down to a recent date, usually asserted by naturalists that flies do not die off at the approach of winter, but hide themselves.¹ I am not satisfied, however, that the question is settled. If flies hide themselves during the cold of winter, why do they not do so on cold days in summer? It is reasonable to suppose that in bad weather they would seek their usual shelter, but they do not do so, but seek hiding-places that may easily be found. For instance, during the prevalence of rain they may be found in great numbers hiding on the under surfaces of the leaves of great trees, where, for the most part, they find admirable shelter. They also congregate in corners of ceilings and walls and cupboards when they sleep at night, but you may search in vain for them in crevices and cracks, behind pictures and wainscots, and in such-like places. The chief reason for supposing that they hibernate is, it appears to me, that some invariably show themselves on warm days in mid-winter; but I am not satisfied that these are not untimely births, the more so as these chance comers do not disappear though very severe weather follows an odd fine day or two, and they continue buzzing about until they die instead of re-seeking their place of shelter.

Another error of naturalists is that flies, in common with other insects, cannot increase in size after they have undergone their final metamorphosis. I have conclusively proved this to be a mistake, though it upsets all the preconceived opinions on the subject. When flies, and indeed all insects properly so termed, are finally hatched from the pupa, they are properly termed fully developed, but they are not always fully grown. For instance, puny individuals are capable of increase in size and weight, and full-sized individuals

¹ See Note C, Appendix.

may also be increased in bulk by a special supply of food. I have proved this on captive flies, so that I am in no doubt of the accuracy of my observations.

The common house-fly appears to weigh about the 1050th part of an ounce, but they vary greatly in weight: 980 weighed one ounce, but these had been killed by poison, and doubtless their bodies were full of moisture. Some which were trapped and suffocated, ran 1194 to the ounce, while others that had been long dead and were quite dry scaled the remarkably light weight of about 10,000 to the ounce. These facts prove that the body of the fly is built up largely of moisture, as indeed are the bodies of all living things, animal or vegetable.

In regarding the senses of flies, we come to a most interesting subject, for it is, of course, impossible to know if their powers are of the same quality as ours, though undoubtedly they have parallel senses to ours. They are very sharp of sight, for instance; but some naturalists have imagined, from the great number of facets which compose the eye of a fly, that objects are multiplied to its vision. I incline to the belief that the numerous facets in the eyes of flies and other insects simply serve to concentrate the perception of objects, and thus intensify their powers of vision when in rapid motion, as when flying or darting; for it may be perceived that flies lose none of their sharpness of sight when flying. They will avoid a thread of silk or fine hair drawn across their path, but not, marvellous to record, a spider's web, which must be much more visible than a fine hair. In what part of the body of a fly its sense of perception is situated I cannot say, unless it be in the nerve centre, which is situated in the back between the wings, for, as I have already stated, I do not think that the fly possesses a brain.

It is impossible to tell if flies possess the sense of

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taste, but their preference for the juices of meats and sweets, and their great liking for milk, seems to show that they do. The organ of smell they seem to be without, but they have a fondness for bright colours, as white, yellow, and scarlet. They will pitch and rest on these colours in preference to dark ones. They seem to have a special dislike to black and dark green and blue.

Flies are absolutely deaf, and, like fishes, they cannot see an object immediately beneath them. If flies are deaf, why have they the power of emitting sound? That is a difficult question to answer; but these two facts are certain, that flies cannot hear any sound. The report of a gun will not cause them to take flight or interrupt their gambols. And on the other hand, flies always emit a slight buzzing sound when they take wing, though this sound cannot always be heard unless they pass close to the ear. They intensify this sound when they are alarmed or angry. It is caused by the friction of the wings against the epaulette-like appendages situated at their base, which look like the rudiments of a second pair of wings. The fact that they frequently make this sound in a very sharp key when they play together seems to show that it conveys some sort of intelligence among them; but it is certain that flies cannot hear in the same way as the higher animals.

Flies are very particular to keep their legs and wings clean, and they frequently brush them with this object. They are very playful, not only among themselves, but with human beings. If you try to catch one with the hand and fail, he will return again and again, and alight on the table before you with a jaunty air of nonchalance that cannot be mistaken, waiting perfectly still for you to repeat your motion, and so on many times. If you chance to catch him, his fright is great. He gives forth an angry buzz, and if you let him go he takes warning. If you can mark him,

you will find that he gives you no chance to repeat the capture.

From the fly to the spider is a transition as easy and natural as from courtship to matrimony.

In my garden at New Orleans there was a banana plant, which bore bunches of fruit that exceeded half a hundredweight. But these bunches of bananas were much infested with what are locally called tarantula spiders, which harboured amongst the clusters of fruit, as well as amongst the leaves. The spiders, with bodies not bigger than a pea, had legs three inches long, so that they could span more than six inches of surface. They were very nimble and very venomous, their bite causing a large and painful swelling, with feverish symptoms of the system. They are much dreaded by children, and not without reason; but fortunately they rarely infest houses. They are fierce creatures, fighting among themselves, and are often a leg or two short as a result of their combats. I also saw one with a wasp four or five times its own size in his mandibles. The poor wasp was completely quiescent, poisoned, no doubt, into paralysis. The spiders, which seem to be a species of harvest-spider, are hunters, and spin no web; indeed, they are entirely without spinnerets. They run so nimbly that it is difficult to catch without injuring them, and I found that they would not live long in captivity. They hid away among the leaves placed in their box, and refused to eat, but fought among themselves during the night, and several were killed in this way. They are nocturnal in their habits, hiding away during the day, with their legs drawn up, and not spread out flat after the manner of our English harvest-spider.¹

I noticed on the walls of the house a small hunter-spider, very similar in appearance to one I have seen in England, but larger. It runs about in little darts or rushes, and suddenly drops on to its victim, which is

¹ See Note D.

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often twice its own size. When it drops, it attaches a line of web to the spot from whence it springs, which line saves it from falling too far, and is afterwards carefully remounted.

To describe the spiders alone which I found in this garden, which might have been two acres in extent, would fill a small book. For the most part they were hunters or wandering spiders, but at night-time I frequently found large and loathsome-looking house-spiders crawling about the walls of my rooms. House-spiders hunt for prey when they fail to catch victims in their webs, which they often do, and they will feed on carrion. The house was overrun with cockroaches, as all houses in the Southern States are; and frequently I would crush a number of these, and they would be left on the floor to be swept up in the morning. Invariably spiders were found feeding on the mutilated carcasses, and more than once I found spiders feeding on yet living cockroaches. Nor do spiders disdain to feed on the slain of their own species. These spiders seem to be venomous to their prey, but their bite has but little effect on the human subject. That of many other spiders has a more or less painful effect, but I have no reason to believe that it is positively fatal in any case. Many spiders, unlike snakes, bite out of pure malignity of disposition, especially those which are venomous. Spiders have been induced to eat blood, but with this exception and that of the bird-eater, I have never known them to touch any creature but those belonging to the classes of—to put it in plain language understood of all—insects, beetles, and spiders. That is, they do not prey on the higher animals, or even on worms, slugs, or small reptiles, which scorpions and some other arachnida do. The action of eating in spiders would be more properly described as suction. I cannot ascertain that any species of them ever pass what we consider as solid matter to their stomachs. They suck the juices most completely from the bodies of

their victims, reducing a fly to an unrecognisable, dried-up mass not one-fourth of its original size. Like the majority of reptiles, most spiders can not only go lengthened periods without food, but actually do not require to eat often. I have kept spiders a month without food. At the end of this period they were gaunt, vicious wretches, ready to fly at a drop of blood and feed greedily on it. A noteworthy fact is, that starving house-spiders would not eat gnats (mosquitoes), ants, or any allied species of insects, but flew instantly on a bed-bug, or minute scrap of raw meat. What is even more remarkable is, that beef was preferred to mutton, and both immediately forsaken for the flesh of pigeons, fowls, or any bird. A living victim is preferred to a dead one, a house-fly before any other fly, but all and every one is forsaken for a crushed cockroach. The spider does not seem to be able to master a strong living cockroach, but will attack a wounded one, and suck it to death. A hungry spider is always a thief, and will prowl about until he finds a smaller one than himself. Sometimes a fight takes place; at others, the weaker individual forsakes his web in evident fear. When they do fight, in about four times out of five both ultimately die as the result of the combat, for they cannot survive a bite on the body. The slightest injury to the thorax of a spider results in a speedy death, and they never live if the skin of the abdomen is pierced. Spiders make a direct attack on a web they wish to capture. They do not sneak up on the under side, as they might do, to surprise the defender, but go straight for the lurking-chamber, which you will always find in the web of house-spiders. These tactics give the defender a good chance of successful resistance, and if he is anything like a match in size for the aggressor, he always resists, and sometimes with success. As a rule, however, the depredator does not attack unless his victory is pretty well assured by reason of his vastly superior size. Then the conquered furnishes

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the first meal to the conqueror, for house-spiders are terrible cannibals. If by chance the ejected spider escapes, it is but to die later on, for he rarely gets away without a mortal wound.

I am not so conversant with the breeding habits of spiders as I should like to be. I have discovered, however, that with several species of both hunter and house spiders the female often receives the advances of the male most aggressively, even going the length of killing and devouring him. Some spiders—house-spiders in particular—make a nest or net of web to contain the eggs; others lay the eggs singly in the earth, or in cracks in the walls, tree-trunks, &c. The number of eggs laid by house-spiders is generally from 150 to 350, though I have occasionally found as few as 60 or 70 in a nest. It will be remembered that I am writing of American spiders only, which may or may not agree with European species. Of that I am not qualified to judge, but I can say that I have found about the same number of eggs in the nests of English house-spiders.

In the garden I have referred to I found no fewer than 142 kinds of spiders, and a few that I could not decide to be distinct species. Not a twentieth part of these were figured or described in any work to which I had access; and the same remark may be made concerning all insects, flies, and arachnida which I found or examined in all parts of America, and in a lesser degree to reptiles and even birds. I met with at least fifty small snakes in South America, and several in the States, which I could not recognise by any description of them in Natural Histories published in America or England.

The eggs of spiders are laid in the autumn and hatched in the spring, and the young spiders have to provide for themselves from the first days of their lives. They continue to grow for years, and some individuals reach a size greatly in excess of that of the majority.

The New Orleans house-spider is generally much larger than those found in England, but that is partly accountable to the greater quantity of food procurable in all probability, the country swarming with flies of all kinds. They are also darker than English spiders, being almost black, otherwise they seem to be of the same species.

It is well known that spiders annually cast their skin or slough. This operation takes about ten minutes to accomplish. The spider proceeds to the under side of its web and brings all its legs under it, so that they are arranged flatly on a parallel line. Then by a series of pulls or hauls, it gradually draws out the legs and thorax from the old skin. The abdomen does not share in this operation. It is only from the legs and the fore part of the body that the skin is drawn off. The operation leaves the animal in a very exhausted condition, and it remains for a long time on the under side of its web, unable or unwilling to regain its lurking-hole. I have never seen harvest or hunter spiders change their skin, so I cannot say if they operate in a similar manner to house-spiders. I have suspected that some species of spider do not change their skin, for they undoubtedly are capable of increasing greatly in size without doing so. The species I refer to are hunters.

New Orleans is a paradise for the house-hunter. Every house stands in its grounds, is picturesquely built, and houses are so cheap that nearly every permanent resident owns his own. As a rule, they are covered with beautiful creepers, but these creepers have their drawbacks. For one thing, creepers are great harbourers of vermin, and the houses are much infested with many loathsome things. Not the least pests are scorpions and centipedes, who invade your rooms in search of the cockroaches, which swarm upstairs and down and all over your walls. You are forced to get used to these vile things for the simple reason that you cannot get

away from them or rid of them. "Kill one, sah, and twenty born," my negro servant used to say, and it was seldom I took a plate of soup or stew, or a cup of tea or cocoa, without finding one or more in it, while the milk-jug was a favourite place for committing suicide amongst these hateful things.

I used to place a basin on the floor with a little treacle or jam in the bottom, and pieces of stick for the vermin to walk up. They would fall in, but be unable to climb up the smooth sides of the basin to escape, and frequently a hundred or more would be found trapped in the morning. If a scorpion or two happened to be among them, half the cockroaches would be dead, stung to death by the enraged tyrants. It would seem that the cockroaches could smell the jam; how otherwise could they know that it was in the basin, unless we conclude that they ran up the sticks out of mere curiosity.

The centipedes were an intolerable nuisance, for they had a nasty habit of hiding among the bed-clothes and under the pillows, attracted there to prey on the bugs, as I suppose: one evil as a set-off to another. But the centipedes were something more than a mere nuisance. It is all very well to be blandly told by gentlemen who think they know all about it that the bites of centipedes and scorpions are not dangerous. It may not be particularly dangerous to have a red-hot wire applied to your flesh, but it is confoundedly painful. Yet that is to be preferred to a centipede bite, which will not only make you dance at the time of infliction, but leave a painful swelling for many days after, accompanied by great disturbance of the system.

The centipedes about my house were of two kinds. One, with fifteen long legs on each side, was about an inch long, and ran like a spider. This was scarce, and only occasionally seen indoors on the walls. The other was pretty common, and I made a closer acquaintance with

it than was pleasant. It was quite frequently found in the folds of linen, clothes, &c., and it was not safe to put anything on without first well shaking it, or to go to bed without first taking off all the sheets and blankets for an examination. I have found as many as three in the bed at one time, each several inches in length. They run very quickly, and are adepts at hiding and escaping. You must not attempt to capture them with the naked hand, as they turn and sting instantly, but the scorpion, when he cocks his tail, may be seized by it just below the sting, and will be powerless to do you any injury. Scorpions always erect the tail when they intend to use the sting. They will seize a cockroach or other victim, and, holding it in their lobster-like pincers, form a complete bow with the tail over their heads, and sting it to death. After being struck, the cockroach may live for a short time, but is paralysed and unable to resist or escape. Scorpions and centipedes eat more often than spiders, and they will devour worms, slugs, caterpillars, which are never touched by spiders, as well as all sorts of beetles and cockroaches. They do not appear to touch flies except in the pupa and chrysalis states of their existence. Some which I kept captive would not touch scraps of meat, but, like spiders, would devour dead cockroaches. When I kept them short of food they devoured each other, and this in preference to such food as I wished to induce them to take.

The scorpions of America are small, and not at all to be compared to some examples from Africa which were shown me preserved in spirit; but a mouse stung by an American scorpion lived only half-an-hour, a rat died in two hours, and a rabbit was so injured that it was palpable that it would not recover, and it was destroyed at the end of the day to put it out of its misery. These experiments do not bear out the opinion of those persons who pooh-pooh the idea of the

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scorpion being highly venomous. Its sting would undoubtedly be dangerous to a person in a weak state of health. But the scorpion is not at all times and in all parts of America equally venomous. Whether it is the locality, or the season of the year, that causes the difference in the strengths of the venom I cannot state.

CHAPTER VII

THE RED MEN

AN educated American gentleman gave me his opinion of the Red Indian in these words: "He was always an unsavoury and irreconcilable creature, and the land is well rid of him." A cowboy put it in these terms: "He is an infernal, tarnation cuss, and the sooner he is wiped clean slick off the face of the earth the better." These two opinions, identical in everything except precision of language, represented, I am sorry to say, the feeling of the majority of the American people for the aborigine of the land. He has been swept away from before his conquerors, and the miserable remnant that is left of him is kept penned up in a corner of the country out of the way of his masters, there to remain a sort of State prisoner, until he dwindles into nothingness. So much has been said, written, and sung about him that I may be thought inexcusable for attempting to say more; but I have something to say and I must say it.

The red race is a doomed race, but it will never be forgotten, for it is an historical nation. There are at least two hundred tribes, the names of which must, and will, live while the world continues. Mohawks and Mohicans are dead to a man, but the names of the tribes can never be forgotten; nor can those of the Crees, Blackfeet, Illinois, Sioux, Chipaways, and a host of others.

Having seen him, lived with him, and conversed with him, I have formed my own opinion of him, and I wish to record that opinion of him and the reasons which have led me to form it, because the truth has

not always been written by those gentlemen who have given us their histories of him, and who have sometimes unduly exalted him as the noblest of savages, or depreciated him as an uncanny wretch. There are Americans who, to their honour, have done him all justice, and the United States Government have certainly behaved as well and generously, all circumstances considered, as it was possible for them to do; but I am not pleased at the feeling and esteem of the bulk of the American people for him. They want to get rid of him; they are waiting for him to die that they may step into the miserable shoes they permit him to wear—to grab his land, to put it plainly. For the Indian Territory is good land and desirable, and already they have found an excuse to take a great strip of it from him.

Most of the great tribes have died out to the last man, leaving only their names and their traditional histories. The following is a list of some of them, with the parts of the continent they inhabited as their homes, so far as I have been able to fix their original location, in doing which I have followed the traditions of the tribes themselves rather than the assertion of European and American historians, who have often fallen into error, the result probably of insufficient inquiry. I may remark that the traditional history of the tribes is jealously guarded among themselves, and handed down from generation to generation with great care and accuracy.

Some of the tribes originally inhabiting Canada and the northern part of the States were known to Europeans by French corruptions of their tribal names; as, for instance, the Loupes, Seauteaux, and Illinois, otherwise the Wolves, Leapers, and Prime Men. The Illinois State and river take their name from being situated in the heart of the country inhabited by this, at one time, most powerful of all the Indian tribes. The proper spelling of the name is Illinonack, meaning the very best or primest of men. The Illinonack made excursions for two thou-

sand miles into the very heart of the North American continent, and at one time or another subjected almost every other tribe to their rule.

In other parts of Canada, and what is now known as the North-West Territory, and in the north-west of the States, were located the Crees, Crows, Slaves, Sioux, Stones, Chipewayans, Blackfeet, and Flatheads, and many minor tribes, or branches of those named tribes. The Flatheads were so called by the French on account of a remarkable deformity of the forehead, artificially produced in infancy by strapping a board to the head which prevented a proper development of the frontal bones. The tribe was really a family of the Illinonack, with some Stone Indians amongst them. They have now quite died out.

In the New England States, and adjoining territory, the principal tribes were the Mohicans and Mohawks (now quite extinct), and the Creeks, Chickasaws, Chocktaws, Cherokees, Delawares, Hurons, Iroquois (a family of the Illinonack), Micmacs, Ojibeways, Pawnees, Shawnees, Senecas, Seminoles, and a hundred branches and families of these tribes.

The Western and Southern States were inhabited principally by the Apaches, Arkansas, Arrapahoes, Comanches, Cheyennes (or Dog Indians), Kioways, Missouris, Osages, Navajoes, and those in the extreme west known as Californian Indians, who are arrant thieves and murderers, and have never been on really friendly terms with the white man.

All these Indians are of the same race of men, and are quite distinct from the savage Indians inhabiting South America, from the ancient civilised Peruvians and from the Aztecs of Mexico. The two last races are completely stamped out, deliberately murdered by their conquerors, the Spaniards. What Indians there ever are in Mexico are marauders from the United States, who murder, and are murdered, wherever and whenever they

meet with the Mexicans, who are often as vile savages as any Indians.

Personally the Red Indian is an exceedingly fine man, whose average height, except in Canada and the north, is fully six feet. He is a bigger and taller man than any European on the average, and perhaps than any other nation on earth; for the Indians are remarkable for regularity of size. You rarely see a small man among them. North of about the forty-eighth parallel the average height of the Indians is five feet six or seven, a falling off in size due to inferior nutrition; for in Canada and Hudson's Bay Territory the Indians used frequently to be starved to death. The Red Man has a retreating forehead; nevertheless, he is a man of very great intelligence. He is not, in my opinion, of Asiatic origin; the Esquimaux of Alaska are, but he is not. I am emphatic on that point. He has neither the build, appearance, or manners or customs of Asiatics. What he is or whence he came, I cannot say; and it is useless to surmise.

He is a man of enormous physical power. When he lived a hunter and warrior, there are undeniable records of his travelling night and day without rest or food for sixty hours at a stretch. His capacity for going without food is simply marvellous. He will row a canoe all day and never think of stopping to eat. But when he does eat! Well, the less I say about that the better, perhaps; for I have no wish to be thought an exaggerator. Certainly if a European fasted and then stuffed as does an Indian he would not survive it.

But there are Indians and Indians. Five of the tribes I have mentioned have become civilised—absolutely civilised. That is, they read, write, have a newspaper (perhaps more than one, for I am writing of twenty years ago), live in townships, work at trades or as farmers, send their children to school, sometimes go to church, though not very often, and *do not* hold political

meetings or vote for Congress. This latter deprivation is a sore point with many of them. They wish to become full-fledged American citizens. These five civilised tribes are the Creeks, Chickasaws, Chocktaws, Cherokees, and Seminoles. They have advanced so far as to have a written code of laws of their own, and many of them have even literary tastes, and the works of some of the world's greatest writers may be found in their houses. The majority of the Indians, however, led a vagabondish sort of existence, and many of them a predatory life.

In 1878 the Indian Territory, a tract of land set apart for their sole use, extended to about 70,000 square miles ; that is, a district nearly as large as England and Scotland combined. The idea of the United States Government was to make some amends to the aboriginal inhabitants of the continent for the universal disinheritance which they had suffered. The territory is enclosed by the States of Arkansas, Missouri, Iowa, and Texas, and contains, as I have said, some very good soil. Much of it is reserved for hunting ; but it is impossible for such a tract, extensive as it seems, to furnish game enough to support its population ; especially as the United States Government are powerless to prevent white poachers from invading the rights of the Red Men. In the year I have mentioned there were but 70,000 Indians within the limits of the territory, or one per square mile. There was a quarter of a million Indians in other parts of the States ; but the territory had only been set apart for their use some seven years then.

For a very great number of years the States have been in the habit of making grants to the Indians of food and necessaries. When the Great West was an unbroken desert, the grants consisted of little more than cheap guns, butchers' knives, powder and shot, and a couple of red or blue blankets. Now they are supposed to be helped substantially in many ways ; but, as a matter of fact, they are shamefully robbed by the Government

agents; and this has led to much discontent and some violence amongst them. But, of course, the Indians always go to the wall, and every attempt at rebellion only ends in their being put down, with an ever-increasing diminution of their numbers.

In general character the Red Indian has been represented as vindictive and cruel, as no doubt he is; but he has some splendid qualities; and I should like to ask if his conquerors have not been vindictive and cruel, and on which side the fault lay in the first place? The great peculiarities of the Red Man are taciturnity, deliberateness of language when he does speak, accompanied by marked acuteness of argument. No people, perhaps, speak less, or more to the point, than he does. You never hear an Indian indulge in idle chatter. If he once makes friends with you, he is to be trusted, and it takes great provocation to induce him to forget his friendship. He is generous, hospitable, truthful to his friends, and industrious. He holds his womenfolk in much contempt, and woe betide the enemy who falls into his hands. He has other faults, but on the whole they are as well balanced by his virtues as in most men. He has received great provocation, tardy and insufficient justice; and is now isolated, and little better than a political prisoner, kept out of the way until he shall oblige his conquerors by dying out. The United States have given citizenship to their ex-slaves; why not to the Red Men, who are more intelligent and better behaved than the negroes, and were the original lords of the soil? It is not true that he is "unsavoury," "irreconcilable," or "a cuss," or that he was ever unredeemably so. He is brave, honest, truce-keeping, and wisely persuadable if he is skilfully handled: far more so than the negro. But unfortunately he has not been skilfully handled, or at all events only on rare occasions and by rare men. Let us see how he has been treated by those who have mastered him and seized his land.

Judging by the best records left us, there were pro-

bably at least thirty millions of Red Men in North America when the first Europeans landed there. To-day there are not half a million, including those in Canada and the British possessions. From the first it was the policy of the Spaniards to completely subjugate all they could get at; but as they never got much further north than Mexico, we will ignore their proceedings here, and skip to the occupancy of the northern provinces by the English, French, and Dutch. The class of men who first colonised these regions were not a nice class of men. They may be described as partly haughty religious fanatics, and partly greedy merchants, neither class thinking it much of a sin to rob or circumvent a savage. A great glamour of sanctified romance has been thrown around the "Pilgrim Fathers." They were really a band of discontented politicians, quite as inveterate persecutors of others as those they fled from their native land to avoid; and they were among the first to do despite to the Indians and rob them of their birthright. They shot, hunted, and burnt alive those Indians with whom they could not agree. There are over one hundred spots in the six New England States¹ and adjacent territories where the aborigines, men, women, and children, were burnt wholesale by the Pilgrims, or their immediate descendants. At a spot near Penicook, Massachusetts, a stockaded village of the Piscataways (a tribe annihilated long before the commencement of the present century) was deliberately attacked at night by a body of the Colonists, among whom there were at least fifty of the original Pilgrim Fathers and their sons, and 500 of the Red Men, their wives and children, were burnt to death. Of those who attempted to escape, some were shot, others flung back into the flames, and only about a dozen of the warriors are supposed to have broke through their encircling enemies and reached the shelter of the forest. Not one of the whites was

¹ Connecticut, Massachusetts, Maine, New Hampshire, Rhode Island and Vermont.

hurt: in fact, no resistance was attempted, the attack being, as it was meant to be, a surprise; and the massacre was the outcome of a simple dispute with the Indians. Is it surprising that acts of wickedness and cruelty such as these led to reprisals?

Even members of their own body who sympathised with the Red Men were persecuted by the Pilgrims. One Williams devoted his life to trying to convert the Indians, and raised his voice in protest against the cruelty and dishonesty to which they were subjected. He was obliged to fly for his life, and would have perished of starvation in the forest had not the friendly Indians had compassion on him. Other men were whipped, fined, and imprisoned for helping the Indians. It is on record that one man was fined for giving bread to a starving Indian. To their honour be it recorded, that many men among the early settlers protested against the scandalous treatment of the aborigines, and the conduct of William Penn was a living rebuke to the wickedness of his compatriots.

Penn paid the Indians honestly a fair price, as prices then went, for all the land he took; and that the Red Men were amenable to kindness and fair treatment is proved by the fact that he never had the slightest dispute or quarrel with them. But Penn's successors soon altered that.

The Indians had a singular custom in parting with their land. They sold it by the "walk." The "walk" was not, unfortunately, a fixed quantity, or extent, of territory. It usually consisted of as much land as could be seen from a certain fixed point; but the extent of the walk was always arranged between the contracting parties before it took place, days, and sometimes weeks or months previously: for the Indians love deliberateness in all their actions. Penn, and his subordinates, bought vast tracts of land, principally from the Mohicans, by means of this singular contract; but when he was

dead his successors soon forgot the greatness of heart and the honesty of the man, and began to oppress the "savages," as they delighted to call them.

These savages were the celebrated Mohican Indians; but owing to some confusion or misapprehension on the part of the Whites, they were known by several tribal names. "Delaware Indians," for instance, were Mohicans pure and simple. The Lennilapanaps were another family of the Mohicans, occupying the Minisink region of the Delaware Water-Gap; a very rich tract of land at the back of the Blue Mountains (Alleghanies), which abounded with game. The word Minisink means "laughing-place," so called probably because the abundance of provision filled the hearts of the Red Men with joy.¹

Penn had been gone from the country about thirty years when his successors could no longer suppress their covetous desires to possess the rich Minisink region, a tract which appears to have been about six hundred square miles in extent; but they knew very well that the Indians would not part with this tract, for their very existence depended on its preservation, seeing that it was their hunting-ground. So the "proprietors" of Pennsylvania had recourse to duplicity. Instead of a "walk," they proposed to the Indians to grant them a *walk and a half*. The innocent children of the forest, as free of guile when unprovoked as the pure air they breathed, consented without a moment's hesitation.

Now the duration of a walk was always a day in time, no matter what the distance, be it one mile or twelve. Indians and Whites sauntered along, laughing, chatting, shooting the wildfowl, and stopping now and then to eat and drink, and never wandering a yard beyond the previously fixed boundary. Probably the intention of this ceremony was to fix in the minds of all, circumstances necessary to remember among people who had no written records. The actual walkers were

¹ It may have been so called because of an echo at the spot.

supposed to be the headmen on either side. Penn himself was one of the walkers in the first walk that took place.

The "Great Walk," as it is called in the records, took place on the 20th September 1737. The starting-place was a great chestnut-tree in front of the Quakers' Meeting-house (of all other places!) at Wrightstown. Previously to the walk the proprietors had advertised in the local newspapers for good walkers and men of endurance, promising to any persons who could walk continuously the whole day and a half five guineas and five hundred acres of the land, to be selected anywhere at the pedestrian's will. This circumstance was ordered to be carefully kept from the knowledge of the Indians. Three men, Solomon Jennings, Edward Marshall, and James Yates, presented themselves before the chief proprietor, Nicholas Depuy; and the Indians on their part appointed three of their oldest chiefs, men who, by reason of their great age, were incapable of great bodily exertion, a sufficient proof that they had no notion of the vile imposition about to be played off upon them.

The appointed goal was vaguely indicated as "the ridge," by which it is certain all the Indians understood a chain of hills distant from the starting-point about five miles. Their astonishment, therefore, was great when Jennings and his companions moved off at a swinging pace, and then broke into a run. Apparently, to avoid giving their case away by not keeping up with the Whites according to custom, the Red Men ran too, accompanied by a great crowd, not only of Lennilapanaps, but of other tribes of Mohicans, all protesting loudly against the unfair advantage which it was now evident that the Colonists intended to take of them. "Why run? Why no sit down and talk? Why no smoke and eat? Why no shoot?" they demanded in angry tones; but on ran the white thieves, never troubling to answer these questions. Men on horseback rode with

them, plying them with drink as they ran, and at fixed intervals food was prepared for them, which they bolted, and then ran on as hard as ever. Towards the close of the day Jennings and two of the Indian chiefs broke down, but the others ran swiftly until nightfall. With the first glimmering of daylight the next morning they restarted, but the Indians withdrew in ominous silence, and the angry glisten in their eyes ought to have warned the Colonists of how matters would end.

Marshall and Yates continued their race until the latter had to give in, too exhausted to move a step farther. It is asserted that Marshall covered nearly ninety miles before he stopped, and consequently he won the proffered prize of five guineas and five hundred acres. The Indians, with the forbearance they always exercise towards those with whom they have been on friendly terms, tried remonstrance with the proprietors, and that failing, offered to bring furs and pelts until they had bought back the land. This offer being met with scoffs and refusal, they did what all brave men do when denied justice—fought for their rights and the inheritance of their children. The war lasted nearly thirty years, and it ended in the destruction of the Mohicans. The miserable remnant of the tribe forsook the Minisink region a year or two before the War of Independence broke out, and became merged in the other tribes. One man alone remained behind, unable to tear himself away from the beloved hunting-grounds. His name was Tataminack, known to the Colonists as Tat or Tathi, and he may justly be considered as the last of the Mohicans. His name will probably be held in everlasting remembrance; for a break or gully in the Blue Mountains is known as Tat's Gap; and here, the tradition says, was pitched his lonely wigwam, and here he lived, and died ultimately of a broken heart. It is refreshing to be able to add that the Whites appear to have been kind to him in his last days.

Such incidents as that just narrated abound in the early history of America, and must convince an impartial judge that there is as much to condemn in the savage White Man as in the savage Red Man. The behaviour of individuals was as criminal as that of communities and provinces, and the European desperado more than rivalled the Indian in his hellish atrocities. There was a fellow named Benjamin Wyatt, a trapper in Kentucky in the year 1808 or 1809. He joined himself to a band of trappers who were travelling in waggons westward in search of fresh hunting grounds. The western trappers were obliged to band themselves together on account of the hostility of the Indians, a hostility provoked by generations of wrong-doing on the part of the Colonists. Wyatt was particularly inveterate in his hatred of the Red Men, and used to boast of the numbers of them that he had slain. One day he made a boast that he would shoot the first Indian, man, woman, or child, that he met. It happened that the first Indians whom they came across were a friendly party, and a young girl of the tribe came smilingly forward holding out some of her beadwork in the hope of finding a purchaser among the trappers. The hell-hound, Wyatt, instantly raised his rifle and shot the poor creature dead. Her tribesmen (Missouris) at once surrounded the trappers and insisted that Wyatt should be given up to them, promising not to injure the others if this were done. Resistance was useless, as many of the Indians possessed firearms; and besides, not a few of the trappers were shocked at the brutal murder. They suffered the Indians to seize Wyatt and bind him to the wheel of one of the waggons. The Red Men then, led by the girl's father, proceeded to skin him alive. His cries were said to have been awful, but not one of his comrades dared to interfere, and in a couple of hours he was a crimson corpse, too horrible a sight to look at. The Indians then departed, taking their murdered daughter with them.

Mouhononini, the girl's father, was still alive in 1879, having then, as he told me, seen a hundred and three summers.¹ Even after that great lapse of time his eye grew dim when he narrated the particulars of his child's dreadful fate. I could record scores of similarly horrible murders, but the incidents of oppression and cruelty against the Indians which I have narrated above are sufficient to show that, whatever atrocities they were provoked to commit, the Whites were often as bloodthirsty as they.

It was in Kentucky that the last great fights between the Colonists and the Red Men took place. The name of the State means in the Indian language the Land Black with Blood. Kentucky is really a Kansas word, and the translation I have given is the correct one. No quarter was given on either side, and Reds and Whites alike slew women and children as well as men. Remnants of at least thirty tribes were driven into Kentucky, and there practically annihilated. That part of the country was unknown to the Whites until 1760. The first settlement took place fifteen years later, and from the very first the settlers made a determined effort to destroy the Red Men, thousands of whom had then already taken refuge there.

It is not a pleasant task to contradict other writers; but I am unable to agree with much that has been written by authors of eminent knowledge and ability concerning the Red Man. To commence with his language. I have seen it asserted that it is poor in quality as in sound, and that an Indian cannot pronounce the labials. All this is wrong. The English alphabet is not redundant enough to represent all the sounds in the Indian languages, and although there are many gutturals, the sound on the whole is musical, and very picturesque; and, for an unwritten language, it is ex-

¹ It was formerly quite a common occurrence for the Red Man to exceed a hundred years of life.

ceedingly copious. There are at least five thousand words in the Indian language, exclusive of proper names, which is quite as many as are in general use colloquially in England or America. But the language was never very fixed. In common with almost all uncivilised nations, the Indian had an objection to mentioning the name of a deceased person. Hence, if he happened to be called after some object or thing, as was commonly the case, after his death a new name had to be found for that particular object or thing. Still, on the whole, one language prevailed and was understood over the whole of the north, centre, and east of the continent. The languages of the south and west differed from the others, yet not very markedly. Certain words were understood universally, and never changed because never used as the names of men. They were such words as the designation of the Deity, spiritual beings, the names of the celestial bodies, and the name for wife. This latter is always called "squaw" by speakers and writers alike; the real word is, however, scarcely pronounceable by European lips. It is something like squa-a-or, pronounced with a prolonged guttural drawl.

It is also asserted by many writers that the Indian's treatment of his wife is not marked by affection or jealous regard of her conduct. I think otherwise. It is true he treats the poor woman badly, and beats her at his pleasure, but he never starves her and is intensely jealous of her. The Australian natives, and many other savages, will sell their wives for a consideration, small or great; this the Indian never does. The lady herself is not proof against the wiles of the white man or the glitter of his fancy goods, but woe betide her if her husband finds her out. He will slash off her nose without a moment's hesitation. You will often see Indian women without noses. This terrible disfigurement is the outcome of their husbands' jealousy. Both parents are exceedingly fond of their children; yet I have seen

it stated that the Canadian Indians have been known to eat their children, and each other, in times of famine. It may be so, but I am inclined to doubt it. I have had excellent opportunities of inquiring about these assertions, but all Indians I have appealed to scout the idea of any such thing ever having happened. They say they were never cannibals, and if there were ever odd instances of it, it must have occurred under circumstances of terrible pressure.

There can be no doubt that in former times the Canadian Indians had to suffer much greater hardships than their compatriots in other parts of the continent. The long winters of the northern regions, with the consequent scarcity of game (much of it having migrated), was in great degree responsible for this. One would think that the advent of the Hudson's Bay Company would do much to alleviate the sufferings of the aborigines, but it does not seem to have done so. The Hudson's Bay people never seem to have treated the Indians very generously, and it is clear that they must have made enormous profits out of their hunting. No money was ever passed to the Indian, and he was compelled to take out his remuneration for the skins he brought to the Company in kind. It may be interesting to glance at the system in vogue.

The Hudson's Bay Company had about a hundred and ten stations scattered about their enormous territory, called dépôts, forts, houses, and posts. To any one of these the Indian could carry his pelts and obtain their value. The pelts received by the Company were the following: Beaver skins, black, brown, grizzly, and Polar bear skins, buffalo robes, all sorts of deer skins, six varieties of fox skins, lynx, marten, musquash, otter, wolf, and wolverine skins. There were few or no other skins that had a value, but bear's grease, walrus tusks, and a few other articles were brought to the forts and dépôts. The unit of currency, if I may so call it, was a small

cube or dice of wood called a *castor*. The value of a castor was reckoned at two shillings, and in these the Indian hunter was paid to the value of the skins he had brought in. He might not take the castors away, but having received them, was required to go at once to the "shop" (never called a store by the Hudson's Bay people, as in the rest of America) and expend them on such articles as he stood in need of. These, for the most part, were blankets (red preferred), hatchets, knives, powder, shot, and cheap guns. There was also a demand for beads, the women and girls being exceedingly clever in ornamenting their robes, leggings, and moccasins with beadwork; and firewater or rum was also in great demand. I believe the iniquitous traffic in this last article was ultimately stopped, but at one time it was carried on, largely surreptitiously, to a frightful extent.

A good hunter generally earned about 150 castors or £15 in a season. The very best of them never succeeded in earning more than some £20; and I calculate that the skins brought in by the hunter for this paltry amount were worth to the Company from £300 to £600. The reader may form his own judgment on this matter from the following facts. As long ago as 1840 a single fox skin of the black variety was worth £30 sterling, and has been increasing in value ever since. It will fetch £50 now. A good black bear skin is worth £20, and a buffalo robe would always command £10, and in later years as much as £50. For these valuable skins the Indian never got more than four or five castors, and so on in proportion. A hundred and fifty castors would represent the value of about 200 skins of all sorts to the Indian, and unless there were good skins amongst them, he might not receive more than sixty or seventy castors. No wonder the Hudson's Bay Company made a pile. In some districts of the Company's territory the value of a castor was less than two shillings.

In the United States and Canada, in addition to the

agents appointed by the Government to look after the interests of the Indians, many gentlemen have voluntarily devoted themselves to the work of promoting the spiritual and moral welfare of the aborigines, but with, I think, very doubtful beneficial results. Christianity has never got much hold of the Red Man's soul, on account, in my opinion, of his superior intelligence ; for it will be noticed that unbelievers generally are people in the habit of indulging in close reasoning. This, and the fact that they perceive that the average Christian does not regulate his own life very strictly by the precepts that he lays down for others, has had a bad effect on the minds of the Indians. I can, perhaps, best illustrate the line of thought of the Red Men by repeating some of the questions and arguments directly used to me, and others within my hearing.

" You say the Great Spirit is love ; how comes it then that He permits so much suffering and cruelty as we perceive in the world ? Why does He make birds and beasts to prey on each other ? and many of them to torture their prey before they eat it ? That is not consistent with love. If God is so powerful as you say, how is it that He could not abolish or destroy sin without sacrificing His own Son ? You say that it is necessary that we should love one another, but you cheat and cozen, and sometimes slay each other. Is that consistent ? You say that the Great Spirit hears and answers prayers ; but does He ever really give you those things you ask for ? Why should Jesus Christ be born of a virgin ? Who can believe such a suspicious circumstance as that ? If He came from God, why couldn't God send Him direct from heaven, and quiet all doubts in men's minds ? " and so on, without end. Many of the questions put are such as no man can answer, and this fact fatally predisposes them to rely on their own opinion. Of the mysteries of faith and the soul's communion with God they seem to have no power of comprehension.

Yet many of their traditions are clearly founded on Old Testament histories, and some of them seem to make a reference to the sacrifice of Jesus.

All the Red Men are highly intelligent, and some of them in the reservation, under the ægis of the United States, have attained to considerable skill in letters, insomuch that they can enjoy the perusal of the works of some of the world's greatest literary masters. All the children of the stationary (that is, the civilised) Indians, who dwell in towns or villages, are taught in State-aided schools, and it is a strange fact that the few Christians I found among them had all been converted under the influence of their secular teachers, and not through the preaching or teaching of professional divines. I am most happy to record that the State-appointed schoolmasters seem all to have their hearts thoroughly in their work, and to realise the greatness of the responsibility entrusted to them. I am sure that they are able and conscientious men, and that the reformation of the Indians is largely, if not entirely, due to their praiseworthy care and patience. There is none of that grasping self-seeking among them that too often notoriously distinguishes the mere Government agent.

Among the Indians, and generally classed with them, are a great number of half-breeds. These half-breeds are, on the whole, more turbulent and less amenable to law and discipline than the pure-bred Red Men; but they are often splendid fellows, brave, determined, and full of energy. The half-breed girls are pretty, affectionate little creatures, and make excellent wives. They almost always marry Whites, and there are very few French Canadians without a tinge of Indian blood in their veins. It is exceedingly rare to find two half-breeds married together. Indeed, all the Indian women seem to have a weakness for white men, and particularly this is the case with half-breed girls. I never heard of a half-breed being unfaithful to her husband.

After the fifth or sixth generation it is scarcely possible to detect the Indian origin of a half-breed (they are all known as half-breeds whatever the degree of quartering between red and white). The black, straight hair, and the aquiline features, are the characteristics which continue longest to reveal themselves. Half-breeds have invariably strong sight, are vigorous and strong, and never suffer from organic disease, unless it is brought on by vice, as excessive drinking. There are great numbers of them in Canada, where they have more than once given the Government great trouble. They do not settle down to any employment of a monotonous nature, and most of them live laborious lives as voyageurs, hunters, lumberers, and not a few as shiftless vagabonds.

CHAPTER VIII

A LITTLE BIT OF THE DESERT PURE AND SIMPLE

THE United States are so rapidly being overrun by their immense population, that it is not at the present moment always correct to write of places as desert that, when visited by me some twenty to thirty years ago, were certainly howling wildernesses ; but there are places that may be well described as "desert pure and simple," and probably always will be so. For there is nothing to attract man to their neighbourhood, or to support him when there. Such spots may be described as being the territory of Death, for death reigns there. And that is saying a great deal ; for there are not many spots of North America that are absolutely destitute of both water and game ; but where you do find desert in the States, there is no mistaking it. It is absolute desert. Probably no man but a naturalist—who is, or ought to be, all eyes, ever on the watch—would find the slightest trace of life in these desolate regions ; but, as a matter of fact, they are rich in rare forms of animal life, especially of the lower classes, and of strange and uncouth vegetable growths. Yet so scant are the latter, that at first sight you would be disposed to positively declare that there was not so much as a blade of grass visible on the ground.

Such tracts as these are prevalent in parts of Arizona, the desert character of which may be inferred when I state that in 1871, in a tract of country much exceeding in size the whole of the British Islands, it is probable that there were not as many as ten thousand

inhabitants, or about one to every thirteen square miles. It was, therefore, probably the thinnest inhabited country in the world. Of these people a great many were marauding Apache Indians, murderers to a man, who rendered the country so unsafe that it was tantamount to sure death to travel in it except in strong parties. Throughout all this vast tract there was no place that could be called a town, or even a village. A few miners here and there were striving to establish themselves, but I strongly doubt if there were a dozen white women in the whole of Arizona. This was the sort of place I had an ardent desire to visit in 1871; for research in wild lands is a passion with me, and has done much to keep me a poor man. Much of my gains in the States were spent there in roaming over lands where there was little or no trade to be done. Not but that I might have done well in Arizona in spite of the paucity of inhabitants, for prices were very high; but the risk was too great. The news that a well-stocked store waggon was in the land would have spread like wildfire, with the result that the hateful and hated Apaches would have come down upon me by hundreds, and then—well, I had no desire to add to the picturesqueness of the desert by leaving a handsome skull and cross-bones there. I have vanity enough to think I am worth better things than that. The Apaches never robbed a man and left him; they always killed and scalped him. Soon after the conclusion of the war, and when guerilla bands, both of Whites and Indians, still infested the land, I had the pleasure of seeing forty of these scamps hanged—I was going to say “all of a row”; but, as a matter of fact, they were executed on a square-shaped gallows, ten or a dozen on each side. They took it coolly enough. One fellow was smoking a big cigar, and the hangman left it in his mouth when he drew the cap over the upper part of his face. He was puffing out the smoke as the supports were knocked from under him. But all these

men were not Apaches, nor did the execution take place in Arizona, which was not at that time a United States territory.

To resume. The dangers of the country made me decide to visit Arizona merely as a holiday or pleasure jaunt. I thought to spend only ten weeks in the country, but I was there nearly six months. During that time I had escapes from the Indians that were truly providential, and on more than one occasion had to show fight. During the greater part of the time my party consisted of one negro servant, one white ditto, three hired men as a guard, and seven prospecting miners from the Eastern States, who joined with us for mutual protection; and lucky for us that they did. The difficulties of the journey were greatly increased by an unfortunate infirmity from which I suffered, which prevented my using an ordinary saddle; and as to take a wheeled conveyance was impossible, I had to have a special saddle made for me. This work was cleverly executed by William Forbes, one of the miners from New Jersey, a man capable of turning his hand to anything, and to whose skill and readiness the whole party were highly indebted. He was a splendid fighter, too, as more than a dozen of the Apaches found to their cost during that "little trot round," as one of the party termed it.

Men sing of "a life on the ocean wave"; they might sing also of a life in the desert free. Dangers were defied or met with a rousing cheer; difficulties laughed to scorn, and life was one continuous feast of delicious joy. Never have I felt such energy of body and mind as in those dear days—past, alas! for ever, I fear. But I am violating the resolution with which I commenced these pages—that I would keep my personal adventures in abeyance, for, truth to tell, I have but little to relate of the sensational kind.

The Arizona region is, on the whole, an elevated

tableland, or at least so it appeared to me. The northern and eastern parts, however, and some other spots, are decidedly mountainous. Having mounted the tableland, if you travel from the east, you will find large tracts of the country which are flat, or nearly so. It is in this district that you will come upon the desert. Some of it, and much of the rocky ground, is absolutely devoid of vegetation. There is not even a moss or a lichen to be discovered. These spots, fortunately, are of limited extent, for a more horrible mental sensation than that occasioned by travelling in a land where not the humblest form of life of any kind can be discovered, and where there is no water, I cannot think is possible. There are no insects even here; no flies, no mosquitoes. The belief amongst our party was that it never rains in this region; certainly none fell during the time we were there. The air was so clear that rocks ten miles off appeared but a mile distant, and it occasioned a singular emotion of mind—in myself, at least—to be riding the best part of the day towards a hill which we never seemed to approach a yard nearer to. There was no odour in the air—a rare circumstance in America, where you can often smell the pine forests when they are twenty miles distant, and I have already mentioned the delightful scent of the prairies; but the air was fresh and invigorating, and produced a cruel sense of hunger and thirst. Men travelling in this region require ten or twelve pounds of solid food per day; but as at first we met with no game, we had to eat sparingly of the provender we carried on pack-mules. Man and beast suffered greatly from lack of water. On one occasion we were forty hours without it. Wherever we found water, whether pools or streams, there was sure to be vegetation for some distance around, and animal life of some kind or other—generally lizards and snakes; but the only bird I saw for many days was a solitary hawk, flying across the heavens at a great height. A species of grass-

hopper was seen near some of the rivers, and a few beetles of beautifully rich and shining colours. Mosquitoes were singularly scarce, but occasionally gave annoyance.

These desert spots are only met with at intervals. The largest we crossed, about fifty miles in extent, was about the centre of the southern portion of the territory, and, as we supposed, sixty or seventy miles from the Mexican frontier. I should not like to say that all parts of this tract are absolutely destitute of vegetation, but there is certainly neither tree nor bush nor water within its bounds, and not the least sign of game, which could not subsist there. The ground was hard as iron, rock with loose stones in places, which had, in isolated spots, been reduced to fine sand by the action of the weather, as I suppose. Towards night a strong wind often blew, with a great drop in temperature, which occasioned great suffering to man and beast; for there was nothing with which to make a fire, and we had to lie huddled together with our horses and mules behind the rocks. In the middle of the day we suffered the reverse of this, for the heat was generally excessive. At night we searched in vain for the dried ordure of horses and cattle with which to make a fire, a sufficient proof that these plains were never crossed except by chance passengers like ourselves. Sunset and sunrise (especially the former) were two of the grandest sights imaginable. The heavens were ablaze with glory, and the rocks transformed into burning masses of ruby, amethyst, and every variety of crimson, purple, and orange precious stones. The appearance of the sky was sometimes almost appalling in its grandeur, and I cannot think of it now, thirty years later, without experiencing some of the emotion it occasioned at the time. From a celestial furnace of many-hued fire it sank almost suddenly to a dull purple; but, for a long time after night had set in, there would be a strong reflected glare in the west, like that occasioned by the Northern

Lights. The sight I am giving you a rough map of—not a picture, for I have not skill to do that—was so sublime that all hands, even the unimpressionable negro, used to watch it night after night; and I remember one of the rough miners, a man who could not read and write, saying in tones of genuine ring, "That sight gives me some idea of what God's home is like."

If it is asked why we lingered in such a desolate region as that I have tried to describe, the secret is soon told. There is gold in that land, and silver, and many other precious metals, and our fellows were not slow to discover it. That was their business there. Forbes was the leader of the mining party, and he one day showed me a piece of stone of dull and slatey appearance, and told me that it was probably worth a thousand pounds to him. "For it's my opinion," he exclaimed, "that it will go forty or fifty ounces to the ton." The mining party, I should state, were prospecting on behalf of some capitalists at New York, who bore their expenses, and rewarded them for their finds; and the result of their investigations convinced me that there is a great future before Arizona. It is, however, a most difficult country to open up, and before mining can be followed on a large and successful scale townships must be established, and a regular train of supplies ensured. And therein lies the difficulty. Very little of the region is fit for pastoral or agricultural pursuit, yet unless farmers pioneer the country, townships are not likely to be quickly established.

Another drawback is the want of water. Forbes declared that some districts so abounded in gold that they were the richest he had ever seen, but that before they could be worked water must be brought from a distance, entailing, with the necessary works and machinery, a probable outlay of at least a quarter of a million dollars. I suggested wells, but Forbes was of opinion that the solid rock under our feet was thousands of feet

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in thickness. Without a plentiful supply of water, mining could not be carried on until railways are established. Placer mining would probably not be successful (it never is on a large scale), for all our diligence failed to lead us to the finding of alluvial deposits. They probably exist, but the current of the stream is generally so swift that the greater part of the gold-dust is probably driven thoroughly into the sand, and there are few or no nuggets to be found.

But for the circumstance that we found the skeletons of two horses and an Indian lying together, we might have thought that this tract had never before been visited by man. How long these skeletons had lain there it is impossible to conjecture. They were perfectly clean and dry, and had not been disturbed by wild animals, showing that not even the ravenous wolves ever frequented this most desolate spot. How they probably came there may be shown by a circumstance that occurred to us about a fortnight later, when we had reached a better, yet still desert, region. I was searching for insects and reptiles among some cacti one afternoon when the day's journey was over. A sudden exclamation from one of the miners who was assisting me caused me to look up, and there, right on the skyline, without any attempt at concealment, and at about five hundred yards distant, was a mounted Indian watching us. I waved a white handkerchief to him as a signal of friendliness, but man and horse remained motionless as a statue; and Wilmington suggested a retirement on our camp, distant nearly half a mile. "For," said he, "where there's one of them d——d varmints there's more, and they are as bloody-minded as Sodom." As there was no need to dispute this elegant simile we began to retire, yet not in such a manner as to induce the Indian to surmise we apprehended danger. He, however, immediately rode into a hollow of the ground, and we heard him shout loudly. Two minutes later

twenty Apaches appeared, spread out like a fan, and rode quickly towards us. "My God, it is all over with us," cried Wilmington, and I really thought it was. Providentially, however, the solitary horseman had been seen by our comrades before he was discovered by us, and they were hastening to our aid. Perceiving our great peril they fired several shots, which had the effect of causing the Apaches to halt. They fired a straggling volley at us, the bullets falling all around us, but doing no hurt. Like ourselves, they were armed with Enfield rifles, and some sharp firing ensued. They killed a mule and slightly wounded one of my hired men, but we shot one of their horses and three of their men. One of the latter was only wounded, and was taken up behind a comrade. After this taste of our quality they rode away, but for three weeks after that they followed us day and night, and then mustered forty horsemen. They were evidently only waiting until they had collected a sufficient force to overwhelm us. Several times we approached near enough to exchange shots, and another Indian was brought down, while they struck two more of our pack-mules, which had to be destroyed. We then fortunately fell in with a surveying party of fifteen men, and the Indians apparently thought we were then too strong for them, for after a day or two longer we became satisfied that we had shaken them off.

Looking over my old note-books, and endeavouring to decide what information may be most acceptable to the reader, I find it almost impossible to stick to my original resolution of abstaining from mentioning matter of a purely personal nature. The journey I am narrating was really a remarkable one, if I may be permitted to say so without trenching upon that modesty that should be ever before a traveller, and I think I can avoid the charge of undue boasting. For the whole honour of this expedition is justly the due of William Forbes and his six companions. Forbes had had great experience in

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the West, but had never been in this region before. He was of Scotch extraction, but his family had been settled in New Jersey nearly a hundred years. He could not be styled an educated man, though of great natural intelligence, while the majority of his companions were utterly illiterate. I have never, however, associated with a body of braver, more determined fellows. All were experienced miners, and one, George Golding, was an Englishman with an Australian experience. He was also an ex-soldier and a splendid shot. It was undoubtedly to his magnificent marksmanship that we were so successful in holding the Apaches at bay. There was some mystery about the expedition of which Forbes was the trusted leader. As I saw he was disposed to maintain reserve on the point, I, of course, never questioned him, but he ultimately told me that he was sent on this "prospecting" survey by a New York syndicate, and that the party would be paid according to results. The expedition was generously furnished with supplies of all sorts, borne by a string of twenty mules. I had half-a-dozen pack-mules myself, besides several spare horses, and when we started we had two and a half tons of luggage with us. Amongst the stores, clothing, flour, and biscuit were the chief items. It is astonishing what a quantity of clothing is required on a rough expedition, and how quickly it wears out, to say nothing of accidents.

The difficulties of the expedition, especially at the start, are indescribable. There were no reliable maps of the region at that time (1871), and not one of us had ever been within five hundred miles of the borders of New Mexico. The territory had only recently (about eight or nine years previously) been annexed to the States, and what was known about it, popularly at least, was very vague. There was a strong opinion among miners and speculators, however, that if there was an El Dorado in America it would be found in this region,

and from what I saw during our jaunt I am of opinion that they were not far wrong ; though now, a long generation after, the country seems to be still undeveloped, perhaps because of the immense capital required to work it. Arizona and New Mexico are no place for the "placer" hunter; no good can be done without heavy crushing machinery, and there are still Apaches, Navajoes, and Comanches to be subjected. These, of all the Red Men, are the most truculent and bloodthirsty. Silver-stirruped, silver-buckled, and with heavy silver rings in their ears, these are veritable children of Ishmael, living by blood and plunder. Even now, I am told, no white man is safe among them.

At the time we explored this region we had no clear idea of its extent or boundary lines. It was New Mexico to us ; and the reader will kindly bear in mind that Arizona is treated in this narrative as a district of that extensive country. That is, indeed, its true geographical position. The entire district west of the Rocky Mountains has a great similarity of general feature, relieved, however, everywhere by great diversity of scenery. Vast rocky mountains, broken into the most fantastic shapes and colours ; marvellously deep ravines and cañons ; roaring cataracts and waterfalls leaping hundreds of feet in sheer descent ; huge and frightful rents in the ground, with no perceptible bottom ; mighty pine forests ; tracts of utter desolation, where not even a fly can find subsistence—these are the features of a million square miles and more of the earth's surface in the vasty West. The wonders of the Yellowstone Park are forgotten when you look upon the *crushing* majesties of this grand country. It seemed to me that God was revealing His secrets to us when I looked upon these mighty wonders. This is no fancy. It had an effect on the behaviour of us all. When we looked on that tremendous shoot of water, falling into a black cauldron more than a thousand feet without a break, deep in the dark abyss of some

creeping river, as yet nameless, with walls of fantastically shaped rock three or four thousand feet high on either side of us shutting out the daylight, an awe fell upon every man of us. The look became grave, the voice solemn and measured and but seldom heard. We forgot, or *feared*, to utter those whimsical but blasphemous oaths that arise so freely to the lips of the wild hunter of the West; and when one of us was discovered on his knees behind a rock because he was ashamed to let his religion be seen, there was no smiling, and he of us who had dared to jest would have been knocked flat. I think every man prayed in some sort that night, and perhaps for many nights. God has a voice and a spirit moving over the vast desert, as well as over the face of the great deep, and we all heard it and saw it.

We entered this wonderful country by way of the Red River valley, and cut across the Rockies *via* Santa Fé. The difficulties of the journey are not to be revealed in words. I am surprised that half the party did not perish. Our loss was confined to a couple of mules which broke down, and one which was stolen by a Mexican, who had been engaged as a tender of beasts, and who deserted, because, I suppose, he did not like hardship and work. As to the party itself, from first to last, I never heard a man complain, whatever the suffering he had to endure, and that was much, though sickness was almost unknown amongst us. From Shreveport, our final starting-point, to the desert country I have been describing, a hundred and fifty miles south-west of Santa Fé, I suppose we rode fifteen or sixteen hundred miles, allowing for detours and turnings, and that journey took us seven weeks in performing. At a very early period of the expedition I perceived that the ten weeks' holiday I had originally purposed to allow myself would have to be trebled, at least, unless I showed the white feather and turned back. "Never do that, man!" exclaimed Forbes. "Slap your dollar-pocket and see it

through!" And so I determined. There is something not to my liking in forsaking good comrades, but I had greatly underrated the difficulties and the ultimate cost of that journey.

We came out of the desert country quite suddenly—that is, the absolute desert; for the tract we now entered upon was still desert to a great extent, but the eye was relieved with verdure. There was some wiry grass which the poor half-starved mules and horses (they had lived for a week on a handful of corn per day) literally flew upon. There were sage bushes and giant cacti, and shrubs four or five feet high, where rattlesnakes and other serpents swarmed, but nothing that could be called a tree. There were wind-flowers (at least such I took them to be), and daisies as large as dollars, and brilliant scarlet creepers twining among the bushes—and all this because a babbling brook rolled and tossed itself over the rocks. But what delicious water! cool as though iced, and so clear as to be perfectly transparent. Half-mad with thirst, I could scarcely tear my lips from the delightful draught before I had drunk a surfeit, and then, as if to gratify the longing for flesh that succeeded thirst, three grizzly bears appeared on the scene, and two of them were shot, thanks to the splendid marksmanship of George Golding.

I was surprised at seeing the quantity of fat which covered the entrails of these bears. An immense quantity was taken out of both of them, and, mixed with the ashes of our fire, formed a very useful soap. The fire, by-the-bye, was made of dead cacti, bush-roots, and vine-stocks. The vines ran along the ground, and over the bushes, with a stem as thick as your wrist. They bore scarlet flowers, and a round berry was beginning to form, which was green at the time we met with it.

Bear's liver is a bit of a dainty, and so are bear's chitterlings, which are far superior to pig's. The meat is juicy and well-tasted, and afforded us a most welcome

addition to our larder, while the splendid skins were invaluable during the cold nights. Grizzly bears were abundant in this region. We sometimes saw five or six a day, and several more were shot. They were generally in pairs, but sometimes a couple had one or two young ones with them in various stages of growth, which seems to indicate that they do not breed at a strictly appointed time. The two we first shot were a female and full-grown female young one, the male escaping although believed to be wounded. These grizzlies were very active in climbing among the rocks, and somewhat shy, especially after being fired at. They were probably persecuted by the Indians, which would account for their shyness.

Here, for the first time since we had been in the Arizona or New Mexico district, I noticed small birds. My remarks about the scarcity of small birds in the wilder tracts of the American deserts will probably be fresh in the memory of naturalists if not in that of the general reader. There was a small finch harbouring in the bushes, which grew somewhat scantily in this district. I could not identify the bird. It was less in size than a sparrow, very slim and fragile-looking, and about as plain in garb as could be. The upper parts were grey and the lower a lighter shade of grey, unrelieved by marks of any kind. Legs and beak very slender, tail long, and grey in colour. I found several of the nests of these finches, built of grasses and lined with vegetable down; all, except one, with eggs in them. The eggs, four or five in number, were white, with minute brown specks, and a few larger blotches of the colour of dried blood. One hen bird was dead on her nest, and a dissection of the little body proved that she had died egg-bound. One nest contained two young and three eggs, probably on the point of being hatched. The time was the end of July.

Another unidentified finch here was a larger bird, only seen twice; the upper parts of the body reddish-brown, with a white bar on the wing, grey beneath;

bill robust in form like that of a bullfinch. This bird uttered a peculiar sharp cry of three notes. It flew in small flocks of ten or a dozen, and was wild and unapproachable, and never seen except on the two occasions referred to. These were the only two finches I could discover in the whole district, and birds were not at all plentiful. Amongst the commonest met with were crows, hawks, turkey-buzzards, and a small owl. The latter was a screech-owl, identical with a species that I have seen in all the Southern States, and the commonest of the hawks was the sharp-shinned hawk, but it seemed a larger bird than those I had seen in other parts.

The turkey-buzzards were seen for the first time after we had slain the grizzlies. About a dozen flew up a few hours after the bears had been flayed; afterwards we generally saw a few when any large animal had been slain. Strange to relate, however, we often came across the skeletons of animals, not a bone of which had been displaced to a greater extent than you would expect from the natural effect of the elements; so it is pretty evident that the buzzards do not visit the more arid portions of this desert. They flew away with such bones of the bears as they succeeded in detaching.

Arizona seems to be the home *par excellence* of poisonous creatures. There were at least four poisonous spiders, including a large harvest spider and a small yellow one, the bite of which was severe enough to disable a man's hand for several days. Scorpions were found here also, chiefly under stones among the bushes, where lurked also large centipedes. Venomous snakes were numerous, but most remarkable of all was a poisonous lizard.

This lizard was rather large and beautifully coloured. Fine specimens were a foot and a half in length, but they appeared much larger than an ordinary lizard of that length on account of the tail portion of the body being very short, and the body itself unusually bulky and rounded, and snake-like in shape. The colour was a bright, deep

yellow, covered with a conspicuous mosaic-like pattern in dusky black. The lizard was not very active, and could easily be caught. I saw one seize a young snake about five inches long and devour it; they also eat beetles, scorpions, and apparently any large insect that they can capture.

I had not the least idea that it was a poisonous creature; indeed I had hitherto thought that all lizards were quite harmless animals.¹ That some of the larger kinds will make attempts to bite I knew, but I imagined that they were incapable of inflicting any hurt more serious than a mere nip. I therefore seized several of these lizards with small precaution, and had consequently a fortunate escape. There was among the miners a man who took a great delight in assisting me in my researches, and he was the first victim. Handling one of the lizards roughly for the purpose of showing it to his mates, it suddenly turned and bit him severely, causing blood to flow from his wrist. This surprised me, and I began to examine the creature's mouth. I noticed that the teeth were stronger than in most lizards, and that they were curved like those of snakes, and when I observed that each tooth was furnished with two grooves I began to suspect evil. A closer examination with the aid of a glass convinced me that there were poison sacs at the root of the teeth, and we at once took precautions to counteract the effect of the bite on our comrade. He soon began to complain of a throbbing pain in his wrist, which spread rapidly up his arm, accompanied by great swelling and strong feverish symptoms. We were greatly alarmed, not knowing the extent to which the reptile was venomous, but we treated him as for a snake-bite. After a night of great suffering our mate was so ill in the morning that he could not sit his horse, and we were obliged

¹ See Note E, Appendix.

to halt. After three days the symptoms began to subside, and the man gradually got well, but he did not regain his usual health and strength for several weeks. Subsequently I tried some experiments with these lizards. Three small dogs were bitten. Two died within twenty-four hours, the third languished a long time and ultimately recovered. For some time I could not get the lizards to bite large snakes; the small ones they devoured. At length one bit a green snake of a non-poisonous species just at the nape of the neck. The snake, which was four feet in length, was paralysed by the injury or the poison, and died in about two hours' time. Another, three feet long, made frantic attempts to escape from the lizards, two of which bit it, and would, I think, have eaten it had I not taken it away. It writhed a little, then became comatose, and likewise died in about two hours. Very small snakes were eagerly seized upon by the lizards, and form, I think, the chief portion of their food. When I tried to take a small snake which they had bitten from them, they held fast to it tenaciously like a dog holding a bone, and were evidently greatly helped in maintaining their grasp by the backward curve of their teeth. I seldom got the snake away without destroying it, but one or two that I succeeded in making them release died very quickly.

The lizards were vicious and easily provoked, biting at sticks or any object held towards them. Two which I confined in a rough wooden case knocked together for the purpose, fought till one killed the other. This one killed three more in succession, and died itself before I could return to a civilised post. At that time little or nothing was known to American naturalists about this lizard. Several to whom I mentioned it had never heard of it, and more than one received my description of it with ridicule. The same thing happened when I first mentioned it in England. There was a

preconceived opinion amongst scientific gentlemen in both countries that all lizards were harmless. By-the-bye, the coloration of this lizard is by no means peculiar to it. There is at least one species of harmless lizard which is deep yellow, or orange, in colour, with black markings. Lizards in general are not very brilliantly coloured except in tints of green, and the beauty of many kinds depends mostly on the reflections, and rainbow-like change of colour, occasioned by their quick motions in the sunshine. Some have a blue colour, very marked when moving in strong sunlight, but when handled, especially if dead, they usually appear of a dull black or grey colour. In this respect lizards differ greatly from snakes, many of which are gorgeously coloured with bright shades of red, russet, yellow, and brown, but I do not know of any snake distinguished by a blue tint.

Many large iguanas were seen during this journey, and several were shot for food. Repulsive as the dish may seem to some people, they are delicious eating, and very nutritious.

There must be deer in this district, for we several times saw venison in the possession of the Indians, and had it offered for sale, but we never saw any of the deer ourselves. On the whole, judging from our experience, game was scarce throughout Arizona.

The Indians never gave us any trouble after our first encounter with them. We shrewdly suspected that our ability to defend ourselves had become noised abroad among these gentry, and that they were fearful of repeating their attack. We always kept a strict guard to prevent surprises; and, our arms and horses excepted, would not have yielded a particularly rich booty to those marauders, which may have had something to do with their leaving us alone. I am sorry to say that there were several white rascals among them, adopting their dress and manners and living as they did.

These were men with whom the United States marshals would have been glad to have had an interview. Two of these scoundrels unblushingly admitted that there was a price set on their heads, and another was discovered to have been a ringleader in the guerilla band of the notorious Quantrell, alias Charley Hart, who sacked the city of Lawrence in 1863 during the Civil War. It was suspected that there were others of the same fraternity among these outcast whites, who dared not show their faces in any settled parts of the country, for not only had they many a grave charge to answer for to the authorities, but had made their names and memories to stink among the people, who would inevitably have hanged them could they have laid hands on them, notwithstanding the elapse of time—some eight years—for they had been guilty of that worst of all offences, never forgiven by Americans, of assaulting unprotected women. So strong was the feeling against these scoundrels that several of our party threatened to shoot the man referred to above if he showed his nose near our camp again, which not only kept him away, but no doubt made the others chary of admitting their identity. As we moved northward towards the more mountainous parts of the country we gradually lost touch with these Indians and their white chums, a circumstance that was a relief to us all, for the best that could be said of them was that they were thieves, and an attack might have been made upon us at any moment. For it was evident that it was only lack of strength and courage that kept these human wolves from attacking us.

We resumed our journey after the temporary halt to recover our comrade, striking a north-west course as nearly as we could, but the nature of the country was such that we found it impossible to maintain a very definite course. Forbes kept notes for the benefit of his employers, and constructed a rough map of our route,

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but it was certain that he would have to trust much to his instincts, or memory, to re-find the spots that were most likely to have an interest for them. But his experience in the wilds was such, that I have no doubt that he would do that without difficulty.

One of the leading characteristics of the landscape was still the utter absence of forest trees. There were bushes of a sort scattered about among the rocks, but nowhere forming a large thicket. Sometimes we rode all day without even seeing a bush that exceeded three or four feet in height—not big enough to form a good fire, in fact. There were creepers sometimes covering the ground, sometimes running up the faces of the rocks or down the precipitous sides of the brooks, but never very conspicuous, either for quantity or beauty. Snakes and troublesome insects harboured amongst them, but though we occasionally saw a few mosquitoes, this is evidently not a mosquito country. I don't think one of us received a single mosquito bite during the whole time we were in Arizona. But their places were efficiently supplied by other nuisances. There was a tiny fly, not bigger than a pin's head, who understood the art of the tormentor to perfection. These wretched little cusses attacked us about the eyes and nose mostly, and sometimes drove us half frantic. The pain was like the prick of a needle, and the great numbers of the fly made defence against it an impossibility. They were almost constantly hovering in front of our eyes with a rapid rotatory movement that in itself was a source of irritation. Then suddenly they darted in, and before the hand could be raised to brush them away inflicted their smart little sting. Wherever that sting alighted there arose a small angry red pimple that remained sore the whole day, and if it were inflicted on the eyelid, as it often was, there ensued a running of the eye that effectually glued it up at night.

This little trouble caused more bad language among our party than all our other troubles put together.

I have said that there were no forest trees. Some of the cacti, however, had almost grown to the size of trees, and were of the most weird and fantastic shapes imaginable. The two most common forms were those of a candelabrum, and a prickly cabbage. Others appeared to be covered with huge carbuncles or warts, the buds of new branches. None of the larger sorts displayed flowers, but there were some small species with very pretty red and purple flowers. Many were covered with large prickles, dangerous because poisonous, and one or two kinds afforded food to a large dark-coloured lizard and to the iguanas. Cacti appeared to be one of the principal vegetable productions of the soil, but I could not discover that they afforded nourishment to any animals except those mentioned, and a few insects. One of the latter was a reddish bug, much resembling a ladybird, but without spots on its elytra.

The vegetable of this region, however, that attracted my attention most was a species of agave. It was a big, close cluster of spiny leaves, capable in some instances of hiding a man and horse taking shelter behind it. One of the miners, who had been in Mexico, laughed when we first discovered this plant, but refused at the time to say why. We were not long, however, in learning the cause of his merriment. When we halted for the night, it was, at the instigation of the man in question, at a spot where several of these agaves grew. He collected several of our leather buckets, and calling to his mates to help him, made straight for the agaves and tapped the centres of the plants. In a couple of hours he had collected several gallons of a peculiar smelling, strangely tasted juice, which he called beer, and which, after a trial or two, all hands took to readily and drank with enjoyment, finding it a refreshing and wholesome drink. That was very well, but subsequently, when

time permitted, he fermented the juice in the sun, and concocted a drink from it on which several of the men got outrageously drunk.

This intoxicating drink was called by Thomas Hailsworth, the miner who brewed it, beer, but he said the Mexicans called it pulque, and that they also made a kind of wine of it which they termed *vino mersel*, and which is the most intoxicating of all its preparations. The plant seems to be a very useful one in the regions where it is found. The thick, fleshy leaves, when deprived of their spines and cut in pieces (they were often eight or ten feet in length), made splendid fodder for our cattle, both horses and mules eating it eagerly. I found myself that it had an agreeable taste, and was very juicy, but full of hair-like fibres. These fibres were marvellously strong, while finer than cotton, and are used for sewing purposes by the Indians and Mexicans, and for any other purpose where fine string or cotton is generally used. Hailsworth persisted in calling the agave a silk-cotton tree, saying that was the native name of it, and also declared that a kind of soap is made from the leaves in Mexico which produces a good lather. Altogether, therefore, it must be a very useful plant.

We soon discovered, also, through the Indians, that the cacti furnished a wholesome drink, at least some of the species. Upon tapping the leaves or stem, the sap is yielded in great quantities, so that it is quite possible to travel in some of the waterless districts for days together without suffering any great inconvenience. Both the cacti and the agaves are said to live to a great age, and only fructify once, when they die. This seemed to be the case with the agave. You seldom see it in flower, which is a proof that it must live many years before that operation of nature takes place—some say a hundred years. From inquiries which I subsequently made, I gather that, in a wild state, the agave (which was generally called an aloe in America) lives about fifty or sixty

years before coming to perfection. The flower stalk shoots up at least thirty feet above the short trunk and cluster of leaves, and about one half of that length is occupied by the bunches of flowers, which spring forth symmetrically at equal distances from all sides of the top portion of the stem. I have counted fifty bunches of flowers, each having a strong resemblance, from a short distance, to a large, mustard-coloured cauliflower. The fibres can be obtained from the agave by soaking the leaves in water until the fleshy part readily separates, and a string made from them is very much stronger than one made from hemp. It is a mistake to suppose that great heat is necessary to the growth of the agave although it is only found for a short distance beyond the tropics either north or south, for I have seen it growing in the mountains at an elevation of fully 10,000 feet, and cacti even higher.¹

There were wolves in Arizona in some numbers, and they gave us trouble, prowling about the horses and mules at night, and terrifying the animals out of their wits. Two small dogs which had been obtained from the Indians fell victims to these ravenous brutes, but we kept them from injuring the cattle. They were very bold, venturing within a few yards of our sleeping-places when all was quiet, and several were shot. If we wanted the skins, we had to be sharp in fetching them in, as the carcasses were instantly attacked by the survivors, who were but little scared by the crack of a rifle. Early one evening before it was dark, I saw nine of these brutes prowling round the camp, and shot one at about eighty yards. The others instantly hid themselves among the rock and shrubs, but in a minute first one and then another came sniffing up to the carcass, and before the smoke of the shot had well cleared away the eight survivors were all at work on their fallen comrade. I timed them, and in six minutes the dead wolf was torn to

¹ See Note F.

atoms and devoured. Each of the others slunk away like a beaten dog, carrying a bone of the slain one in its jaws, to be gnawed at its leisure, I suppose. Our fellows set several ingeniously constructed traps for them, but they proved useless; the wolves were too cunning to enter them. When we could find sufficient fuel we made several fires round the horses as the best means for their protection, for a watchman could not protect the whole line at once. While he was at one end the wolves were bold enough to snap at the horses at the other, and whenever the brutes succeeded in making their jaws meet they tore out a piece of flesh. We could not afford to be continually firing at them; ammunition, which is weighty to carry and so was limited in supply, was too precious; besides which, wolf-skins are of small value, and not worth transport in a difficult country.

Mountain-marmots were very numerous in many places, burrowing among the mountains, especially where there was a short growth of wiry grass or tangled creepers. Some parts of the country looked like a huge rabbit warren. I call this animal a mountain-marmot to distinguish it from the prairie-marmot, already described, for it is clearly a distinct species. It is smaller than the prairie-marmot, lighter in colour, with a short rabbit-like tail of pure white, and does not raise little mounds of earth over the entrances of its burrow. Nor did I see any owls associating with them, as is always the case with the prairie-marmots. These little creatures were very shy. Sometimes I surprised one sitting at the entrance of its burrow, carefully cleaning its whiskers with a pretty brisk action. As soon as it perceived me it would bolt, and after a pause I would see its little head carefully peering out of its hole to see if I were there. Sometimes they uttered an angry kind of squeak, at the same time elevating the hind-quarters and bringing down both hind-feet with a smart stamp, evidently intended as an evidence of indignation at being disturbed.

I tried to dig into one of their burrows, but found this impossible, and I wonder how the animals can have burrowed into the hard rock. By trying them with sticks I found that the holes ran more than twenty feet into the ground, generally with a slight upward slope, but sometimes down under hard masses of rock. As with the prairie-marmots, rattlesnakes and other serpents occupy some of the holes, but these reptiles may be found in any hole or crevice, whether made by man, animal, or nature. One day I saw a large hawk (species not identified) with a marmot in its talons, so I came to the conclusion that snakes are not the only enemies of these little animals.

Among other small mammals I may mention mice as being frequently seen gathering up the grains of corn shaken from the horses' nose-bags. They appeared to be the common field-mice found in other parts of the States; but among the rocks I found a jumping mouse. It was so active, and took such tremendous leaps, eight or ten feet, that none of us succeeded in catching one, anxious as I was to give it a closer examination. It was not often seen either, and a pair together is the greatest number seen at one time.

As we travelled northward the character of the scenery rapidly changed, and the country was mountainous in no small degree, insomuch that we had frequently to change our route, the ground being impracticable for horses. Our friends were continually on the outlook for signs of gold, but the most auriferous districts we met with were undoubtedly in the arid plains behind us. In these mountains, however, according to the miners, there were abundant evidences of the presence of rich veins of copper, lead, antimony, and coal, with traces of many other minerals of value, of which silver was the most important.

Personally, I was far more interested in the scenery and the animated inhabitants of the country than in

mining speculations; and I noted with some surprise, never before having been in a country of this character, that the higher up among the mountains we got, the richer and more abundant in species the vegetation became. Flowering plants were scarce in the plains, and in many regions entirely absent, but the sides of the mountains were abundantly furnished with them, and we seldom sighted a precipice without gorgeously gemmed shrubs hanging over its abrupt cliffs, and clinging to every ledge that afforded them sufficient room for their roots.

Water, too, was more abundant than in the plains, generally taking the form of babbling brooks and tiny rills, rushing furiously at the bottom of deep chasms, often churned into a mass of foam by the rapidity of its descent among broken rocks, and not unfrequently dashing in one unbroken stream into a fathomless abyss. My mind never reverts to this time but it perceives, in the vision of memory, one magnificent fall of perfectly terrifying depth of descent—a nameless fall, so far as I know, and possibly never looked on before by the eyes of white men. The depth of this fall can only be conjectured; it was certainly not less than a thousand feet, and probably was half as much more. Most of our party thought it not less than two thousand feet. We heard its majestic roar an entire day before we discovered it, and the effect of the sight on our minds was greatly enhanced by our coming on it quite suddenly, and with the greatest part of its terrific drop above our heads. It rushed over rocks so high above us that it looked almost as if the water was belching forth from the heavens.

The volume of water must have been very great, judging from the deafening roar of its descent, but it fell in a solid stream of no great breadth, as though it came forth from some huge pipe, or, rather, tunnel. Not the slightest break or interruption occurred in its entire fall, but it fell absolutely into a mighty cauldron, the depth

of which it was impossible to even conjecture, so densely was it enveloped in clouds of feathery spray, and the brink of which was not approachable by reason of clefts and broken rocks. A mile below the fall the chasm was half a mile wide, with a small river rushing wildly along at the bottom. It was necessary for us to cross the river, but it took us two days to find a crossing, and then we had to pass back and recross four times before we could proceed in the desired direction. The difficulties of these passages it is impossible to describe in words. We lost a horse and a mule by drowning, and a horse was destroyed by falling into a gulch. The latter carried its rider part of the way down, and the man was very much bruised and cut. We all had narrow escapes, and not one of us avoided more or less serious accidents. Fortunately there were no shirkers among us, and we all pulled through. Some of the cañons we had to cross were 500 feet deep, and we only found places to ascend and descend by permitting the mules to have a free head. The sagacity of these animals was marvellous, and the horses seemed to gain confidence from them, as they readily followed their lead. It was, however, ticklish business with the latter; but we got past all the dangers with no worse accidents than those I have mentioned.

In this part of the country we saw no body of water that could be described as a lake or pool, nor any marshes, but there were spots that had the appearance of shallow dried-up lakes, and salt-licks were found every now and then. The water in the rivers was shallow, but rushed along with a current so strong that in many places it would bear a horse off its legs; and nearly everywhere it was dangerous to cross on account of the broken rocky bed, as well as strength of the stream. Small falls were abundant, and under and near them there were generally deep holes. When we had got fairly among the mountains the sight of waterfalls was of daily occurrence. Many of them were of magnificent

altitude, though we did not meet with another of the magnitude of the one described above. Some, however, fell in dribbling streams from a height of many hundreds of feet; others were broken into fanciful cascades by intercepting rocks; others again, and these were the largest and broadest, dropped only a few feet over ledges of rock.

I noticed a very singular fact in this country, afterwards found to be almost general in other parts of America, both North and South, viz., that whenever a fall occurred it did so at an apparent change in the character of the rock or ground. I mean that the water seemed to run suddenly from rock of hard texture to rock of a softer nature, and that consequently the softer rock wearing away fastest caused the break in the ground at the fall. The only places where I could not distinctly trace that this was the case was where the water seemed to have been diverted from its original course by some vast impediment, as a huge rock or mountain, and forced over a precipice. Afterwards, in other parts of America, and in country of a very different description to this mountainous region, I perceived the fact I have stated to occur in a very marked way. There is, therefore, no doubt that there is something more than mere fancy in what I have stated. I am no geologist, and perhaps the fact I have noted has been observed by others better able to describe it and state the reason. None of our miners, though they had years of experience in searching and examining all kinds of country, had ever noticed it before; but they readily perceived it when pointed out to them.

There were fish in some of the rivers at least, for a species of trout was sometimes caught by us, both with grubs and artificial flies for bait. The largest secured weighed about two pounds. I also saw a few other small fish of species unidentified, none of which we succeeded in capturing.

While searching for worms for fishing purposes I came across a very singular creature. Pulling aside a

mass of rock, I disturbed what at first sight looked like a large, fat worm, which appeared to have burrowed under it. Taking it up, I perceived that it was furnished with two small legs or hands, situated close to the head. I had read of the sirens of the Old World, but did not know that they were represented in this country. There could be no doubt, however, of this being a siren, or two-handed lizard. It was between six and seven inches long, of a dull red or pink colour, and the eyes mere dots, so small that they were scarcely perceptible. The legs appeared of little use for progression, and the creature when placed on the ground moved forward in a straight line by a series of slight undulations, and not by wriggling from side to side as snakes do. When, however, it was intercepted it used the feet to move the fore part of the body slightly from side to side with a searching manner, as if seeking for a place of escape. It also lifted the head a little, seemingly with the same object, though it was difficult to believe that it could see much, so minute were the eyes. That the feet are but little used for locomotion is further proved by the fact that when the creature was prevented from moving forward it often went backward as fast as in the other direction. The gape of the mouth was very small, and it is evident that the animal's prey (probably grubs and small insects) must be very small also.

The body was all one colour, but darker above than below, and covered with very minute, snake-like scales, arranged in an immense number of consecutive rings, giving it a very worm-like appearance. The body, however, was compressed like that of a snake, and the eyes covered, probably for protection, with a semi-transparent film. I made a diligent search for others, but this was the only one found. I cannot, therefore, record anything concerning its habits or food.

Arizona seems to be a perfect paradise for reptiles and noxious insects. Most of those found in the other

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Southern States are here in increased numbers, together with many new species. I noticed several snakes that I had not seen elsewhere, but I failed to identify them. The common black snake, and the green snake, are abundant in some localities, in addition to the rattlesnake already mentioned. I never saw the moccasin, which I believe is only found in marshes and damp situations, but I found a small snake of red and white coloration, which I believe to be a species of coral snake. The largest snake I saw in Arizona, the rattlesnake excepted, was a light brown one, with a chain-like pattern of dark hue, and nearly six feet in length. It was climbing up the face of a steep rock with considerable speed, and I fetched it down with a big stone. It did not appear to be a venomous snake, but one of our fellows smashed its head; yet it continued to wriggle when struck on the tail for several hours. The crevices of the rock it was climbing swarmed with numbers of green lizards, about nine inches in length, and I suppose it was intending to prey upon these, when killed.

Here also we found the "Californian toad," which is really a species of lizard, and the most horrible reptile, in appearance, found in North America. It is, however, a perfectly innocent and inoffensive creature. It has not at all the appearance of a lizard, and those who style it a toad are excusable, for it is squat and toad-like in appearance, with a very short tail, and just the head of the creature it is named after. It is about the size of a large toad, mottled in colour, with a light grey stripe down the back, and both head and body sprinkled over with formidable-looking spines. It may, however, be handled with perfect confidence, as there is not the slightest fear of a prick, and its threatening appearance I presume to be given it by Nature as a sort of protection for intimidation. The most remarkable circumstance about this strange creature is the fact, stated on excellent authority, that when captured it squirts drops

of blood from its eyes, with the supposed intention of causing its captor to drop it in disgust or fear. There seems to be not the slightest doubt about this extraordinary fact. I was therefore greatly disappointed that I could not induce those which I captured to exercise this strange means of defence, which I particularly wished to witness.

In Arizona these Californian toads (I know of no other name by which to designate them, though they are certainly lizards, not toads) lurk in holes in the rocks, and come out in the daytime to bask in the sun. They run more nimbly than their awkward form would seem to indicate, but not like other lizards, and they are easily captured. They remain quite passive in the hand, not trying to escape, but when put down again, immediately make off as fast as they are able. The fore legs are longer than the hind, and the creature has quite a different gait to other toads or lizards. The fore part of the body is carried much higher than the hinder, and when the toad stands still, it much resembles—viewed sideways—a minute cat sitting on her hind-quarters. I very seldom saw them feed, but once or twice I saw a small fly or two seized and swallowed. From what I subsequently saw, I believe that they prey chiefly on crawling insects which they find on the ground.

In the beginning of the month of October I saw a pair of Californian condors flying directly overhead at a great height. They pitched on a high rock at a distance of a mile or more, and an attempt was made to get near them. Unfortunately one of the men fired at them just as I was getting near enough to observe them. They took wing, and were not seen again. I hoped that their breeding-place might be near, but I could not find any indications that it was so.

A few days later we sighted the first deer seen since we had been in the country. They were of the black-tailed variety, and only seven in number. They were so

wild that all our endeavours to get near them were futile ; and though a dozen shots were fired at them at ranges of five to eight hundred yards, only one was struck, and that one gave our hunters a four hours' chase before it was secured. Once afterwards we saw a small herd of these deer, but did not get any of them ; but a large grizzly was shot.

I just mention a few of the animals seen during the latter part of our journey, but enter into no details, as they will all necessarily be described in the next chapter. Coyotes, not so abundant as in the Mississippi prairies, and local as to distribution. The cougar was seen twice ; and a large bear, believed to be the great black bear. Wild-cats were seen several times in thickets on the lower slopes of the mountains, and in similar situations there were partridges and quails, identical in species with those found in California. Turkey-buzzards were seen, but were scarce. They several times appeared in small numbers when we did not suspect their vicinity, attracted by the offal of animals that we had killed. The bald eagle was seen, and several varieties of hawks, which were not identified. Most sorts of waterfowl "were conspicuous by their absence" ; but we saw a few flocks of ducks and geese flying across the country. They did not alight in our sight, and none were obtained, so that I cannot say to what species they are to be referred. On one occasion I saw a rail, but I had no gun in my hand at the time, and it hid itself instantly among the herbage, which happened to grow pretty thickly in the small stream where it was, and though a diligent search was made, it could not be flushed. Unfortunately we had no dog that was good for anything. Very few other animals or birds were seen, and those not already described were unidentified. My predilection for search and inquiry in this most interesting direction was greatly interfered with by the necessity we were under to hurry through our journey. I regret, also, that I have no means of fixing

the precise locality of any of our discoveries. The whole country, at the time of this journey, was almost a *terra incognita*, except to a few wild hunters and mining prospectors.

With regard to the vegetable productions of the regions passed through, I really know much less than of the animal. Cacti, as I have already said, were among the most striking objects. Afterwards, among the mountains, we met with a few trees, but not any forests. If trees are anywhere so abundant as to cover extensive, or even tolerably large tracts, it is in parts of the country not visited by us. We met with trees having much the appearance of grass-trees, the long narrow leaves of which were sharp enough to cut the hands; and there were trees and shrubs of eccentric and peculiar shape, which hitherto had been quite unknown to me. Among the herbage I thought I recognised wild-flax, and in the mountains were shrubs resembling the azalea, some bearing scarlet flowers, others yellow. Occasionally we met with isolated valleys and gulches, which were richly beautified with flowering shrubs and plants, which none of us could name. Such spots always had a tiny rill of water running through them, which was sometimes quite hidden by the lush growth closing over it. It seems to me that it is only water that the land wants to turn it into a blooming paradise. In one of these gulches we found a humming-bird's nest lashed skilfully to the extremity of the long leaf of a palm-like shrub, and hanging within two feet of the water. There were no eggs in the nest, and the humming-bird itself was not seen. There was evidence that these brooks, which all ran into the rivers, were dried up during the greater part of the year. They were the only spots where small birds were particularly noticed, but reasons already given prevented my giving particular attention to them. Many times the presence of gold and other metals was detected in the sands of these brooks, and sometimes the waters

were so impregnated with saline and other minerals that we could not drink of them.

There was much difficulty in finding subsistence for man and horses alike in this country. The stores we had brought with us had to be very carefully husbanded, and we suffered from insufficient feeding. While the corn for the cattle lasted, they did tolerably well on a small quantity daily, supplemented by what herbage they could pick up; but when it was exhausted, they suffered severely, and were soon reduced to mere skinfuls of bones. From this it may be guessed that grass is scarce in Arizona. What there was of it grew in scanty tufts, except in favoured spots. A single horseman or two might have done very well, but when it came to supplying nearly thirty beasts (including pack-mules), it was a serious matter. For a time we did very well by feeding them with the sliced leaves of the silk-cotton tree (*agave*), but this plant is not universally distributed over Arizona, nor very abundant anywhere. So we were put to our wits' end frequently to prevent casualties among the horses and mules from sheer starvation. We had already lost several animals from accident; and although this did not put us to any great inconvenience, the quantity of stores being greatly reduced from usage, latterly the horses had become so weak that they were incapable of carrying a man through the day's journey, and the mules had to be ridden alternately with the horses. These circumstances caused the termination of our journey to be very hurried, almost resembling a flight from the country. We arrived at Santa Fé on the 4th November, just four days short of six months from the time of commencing our journey, and here we all had to remain some weeks longer to rest before proceeding eastwards, for both horses and men were much exhausted. We had been greatly disappointed in not meeting with more game on our journey, only a few bears and one deer having been shot among the larger animals in six months.

CHAPTER IX

THE YOSEMITE VALLEY, CALIFORNIA AND COLORADO

THE journey described in the last chapter left an "itch" in my mind to be at it again. The glorious freedom of a wild life in the desert places of the earth has an influence, bad or good, just as you please to think, on my mind, which I cannot conquer, and which has unfortunately kept my purse in a very flabby state all my life. The "little trot" round Arizona cost me altogether nearly eight thousand dollars, not reckoning the loss through neglect of business. Therefore the itch had to be endured for a pretty considerable length of time, while I gave my mind to the wiles of truck and bargain, and collected the wherewithal for another slap across country. If I could only have kept quiet until I had made a pile! But I couldn't. If a duck is to be kept out of water, you mustn't feed him near a pond. So all the while I was pottering about the verge of civilisation, I was thinking of the wild lands westward quite as much as about that precious hardware and general waggon that brought me bread and cheese and powder and shot. At length the crisis came. I could bear it no longer, and off I went like a rocket. The only consolation I have is that I might have done worse. As a sweet Yankee gal once said to me at camp-meeting (I pay great reverence to camp-meetings), "What a precious thing you don't take to whisky! I guess that's just sweet in a man." Just so! And what a precious thing I didn't take to captivity by promoting

this dear girl to the deputy-boss-ship of my show (I was mighty near doing it), instead of my old black servant—drat his dusky hide! *He* took to whisky kindly enough —*my* whisky. But I am prosing.

The year 1874 was closing when I commenced the longest and most trying journey I have ever made. If surprise is expressed that I should choose the month of December for starting on such a journey as that now to be described, I can only say that having completed my arrangements at this unpropitious time of year, I did not feel inclined to remain idle for some months, and though I commenced my journey in a violent snowstorm, I enjoyed it none the less on that account. Alas! those are bygone days of youth, when I gloried in hardship and suffering, and sought them rather than feared them. But all things come and all things go, yet I have a joy in the memory of the past that I would not part with for all the gold in California. Who dare say, then, that my time and energy were misspent?

This time I started in a different style to that adopted for the Arizona journey. I had a light but strong waggon specially built for me, and my only companions were my black factotum and the white driver of my mule team. The horse which carried me safely through Arizona was still in my possession, and followed behind the waggon for occasional use. Poor old fellow! he was no great beauty, and growing somewhat old; but he and I understood each other, and I object to part with old friends; and a quiet old horse is the horse for me. Like my black cook, he had his faults, but they were well balanced by his faithful services.

A word about this waggon-travelling. It is just the thing for the American wilds. Travelling in house-waggons was quite a common method of journeying a quarter of a century ago, and is still resorted to much oftener than people in this country seem to be aware of. At least one President of the United States

spent a great part of his youth in wandering from place to place in a waggon. Americans used to wander in this manner in search of a pitching-place, and sometimes merely to "see the country" before settling down; and when I first became a roamer over the face of this magnificent continent there were hundreds of men who followed the same calling, and "ran" a travelling store-van, furnished with every imaginable household requisite in the hardware line, &c., with powder and shot, patent medicines and whisky—the trade in the latter article being mostly surreptitious, and carried on to a terrible extent. I never sold whisky myself, but I always carried it for the purpose of furnishing gratuitous "nips" and "nobblers" to the boys, which they must and will have, by hook or by crook. It will be understood that my present journey was absolutely of a non-trading character, for the twofold reason that I intended to keep wide of townships, and had no room for stores other than those intended for my own consumption. This journey was, without reserve, intended to be an extended holiday trip, and I was well furnished with such stores as it would be difficult to replace in isolated places; but it is a great advantage in travelling in the States, that you can never wander to any great distance from a place for recruiting. This greatly minimises the danger and the difficulties of the wanderer, and since 1874 the facilities for travelling in the States in any form have immensely increased. Then railways were in their youth, if not actually in their infancy, and thousands of miles of good roads and tracks have been laid down throughout the country since then, while the population has increased by more than a third, and villages and townships have converted deserts into centres of civilisation and commerce. In one thing, however, the States have remained almost at a standstill. The police is a disgrace to so great and enlightened a country, and to this day a Derringer is almost as necessary to the traveller as a walking-stick,

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unless he is prepared to have any snub-nosed little scamp that is old enough to grasp a six-shooter stick him up. This is no exaggeration. I have actually seen a twelve-year-old boy threaten a stalwart man with a revolver for a fancied affront of a very trifling character.

I consider Dacotah the base of my journey in this expedition, chiefly because I there left in store my waggon and other heavy articles, and there fitted out my present equipment and made the start. It was snowing when I left that city, and I was compelled to stop the second day out, receiving the warm hospitality of Mr. Silas, a farmer, who has, I regret to say, long since passed over the border. He was a warm lover of his country, and took a profound interest in its natural history as in everything else that concerned it, and I owe much to his advice and assistance, for he knew much of a part of the country I intended to search.

The winter of 1874-75 was very severe in the Central and Northern States, and I was greatly delayed and interrupted, not reaching Fort Kearney, on the Nebraska, until the end of February 1875, or getting fairly started on my journey until April. I had, also, one or two troublesome accidents, entailing loss as well as delay; but I will not be tedious or stay to narrate them. I was compelled to take this route as the only sure way of finding a convenient passage through the Rockies for a waggon, though it was not quite to my taste, being too much of a public road. Though four years before (1870) there was not a population of 15,000 in the entire State, it is the great road to the Far West, and sometimes swarms with parties of Mormons bound to Utah and bliss, and Government teams carrying stores to outlying stations and the Indian protégés, and in the route of the Great Pacific Railway. Before this line was completed I suppose all the land-transported goods trade in the

States took this road to California and the West generally, and it was no uncommon sight to see a caravan of a hundred waggons with thousands of horses and mules, and from eight hundred to a thousand or more men and women, for there was generally a fair sprinkling of women in the trains, especially if they were bound for the city of Saints. The road was well marked by a dreadful sort of milestones—the bones of men and cattle, especially at spots where there had been encounters with the Indians, a thing of frequent occurrence in the early days. Nebraska was also the headquarters of the hunters and trappers, and there was still a considerable number of buffalo in the State when I passed through it. I might have shot a hundred; I contented myself with half-a-dozen, and for the robes of four of these I afterwards obtained from a hundred and fifty to two hundred dollars apiece, and that after they had been in use nearly two years. Notwithstanding the persecution, game was still abundant in the State, and often during the bitter weather deer and other animals, and birds innumerable, clustered round the waggon at nightfall as if seeking protection; and hares were picked up by hand, too benumbed to attempt to escape. One evening about dusk, a bear tore down a deer not fifty yards from the waggon. The poor thing uttered a terrible cry, the like of which I have never heard a deer utter on any other occasion. For long afterwards we could hear the bear crunching the bones like a great dog. Bears were very abundant in that district. We had already shot four during the week, the reason that this one was left undisturbed. Its destruction would have been a wanton act, as the roof of the waggon was already too heavily laden with wet buffalo and bear hides.

Notwithstanding the suffering entailed by our early start, I was glad that I had made it, as it enabled me to keep well ahead of the crowd of teamsters bound westward. I was overtaken, however, by a party of Mormons

numbering over seventy, of whom only eleven were full-grown males. They were not recruits, but old hands at "bigamy, or a wife too much," as Captain Marryat's Jack Tar called it, and were Germans and Englishmen with one exception, a "Yank" from Harrisburg. One of the Englishmen had eight wives, or concubines. He was a shoemaker from Northampton, and made no secret that he had a wife and family in the old country. He came to me one day and offered to lend me a wife in return for a bottle of whisky, or sell her outright for two bottles. The lady would be quite willing, he said. The entire party, I should say, were professed teetotallers, and I heard one of them preach a searching sermon against the sin of strong drink.

I have visited Utah and Salt Lake City, but I do not know that I shall have space to describe my impressions there. I will, however, say this, that I believe the scoundrel from Northampton was not a good type of Mormon. I was greatly surprised at the extreme orderliness that I observed to govern the community. They are industrious, frugal, fond of their children, and courteous and hospitable to strangers. But their immorality is simply horrible — loathsome. Marriage, if applied to Mormon men and women, is simply a mockery of the word. I am convinced, from what I have both seen and heard, that not only is a Mormon ever ready to lend his wife, and the woman to be lent, but that any woman among them will go aside with any man who takes her fancy. Their jargon about spiritual wives and temporal wives is simply humbug. There is no such thing as a real wife among them. They are simply a society for the organisation of prostitution, and domestic felicity of a refined nature is impossible among them. No man among them has, or can have, that estimation for woman which alone can make it possible for him to make her his trusted companion and friend for life. It is to the honour of the United States Government that

they have done their utmost to stamp out this social abomination, and relegate the Mormon to his proper place among the felons.

I had some difficulty in shaking off my unpleasant neighbours. They desired to travel in my company. I was not at all desirous of their companionship, and yet disinclined to give offence. Indeed, I had to exercise much patience and self-abnegation, for the ladies were particularly anxious to render me any little service such as women generally delight to exercise towards us less gifted mortals, and I could not, of course, be rude to them. They clung to me for several weeks, begging and borrowing many little things that took their fancy in my waggon, and could not understand my turning out of the beaten track. They were very anxious to learn the nature of my business, and could not believe that I was journeying simply for pleasure, and to study the ways of birds, beasts, and fishes. They suspected, I think, that I turned aside simply to get rid of them, and to some extent they surmised right.

I followed generally the course of the Nebraska. Nebraska is Indian for "river of fords," and the name is expressive. For I doubt if there is another river of like length in the whole world that is generally so shallow. The Nebraska rises in the very heart of the Rockies, and has a course of fully a thousand miles, is often over a mile broad, and is yet so shallow that steamers and barges of the smallest draught cannot navigate it. It is, in fact, fordable almost everywhere, and when the river is exceptionally low, you may hop and jump from shoal to shoal, and pass over almost dry-footed. There are, however, in places some dangerous quicksands in its bed, and caution should be exercised in attempting to pass over at unknown and untested fords. I have heard that whole herds of buffalo have been swallowed up in these quicksands, and I know that fatal accidents have happened to teamsters and hunters. In 1872, for instance,

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a man that I knew well lost a waggon and valuable team of mules at a spot about eighteen miles above Fort Kearney. The poor animals made a terrible struggle, but they and the waggon gradually sunk out of sight, and their driver and his mate had narrow escapes. About a year later a trapper named Wilmot is known to have attempted to ford the river near the same spot. As neither he nor his horse were ever seen again, there can be no doubt that they were sucked down. There are other instances on record.

Until the Rockies are reached the course of the Nebraska is over open prairie ground, in which there are no considerable elevations that I know of, and much of which is as flat as a pancake. There is the greatest possible contrast between this river and the next great tributary of the Mississippi northward, the redoubtable Missouri, distant scarcely more than a hundred miles. But the animated nature along its banks and the country on either side is precisely that found generally in the Mississippi valley. There are more trees along the course of the Nebraska than I have noticed on other rivers of this region, not growing in woods, but in park-like clumps, that give the country in many places an exceedingly beautiful aspect.

After some wanderings in search of special objects, with which I need not trouble the reader here, I, after all, followed the course of the upper reaches of the Nebraska river, and crossed the Rockies by way of the South Pass, for I perceived that my ambitious wish to find a waggon pass for myself was not likely to be realised. There is, of course, an indescribable difference between the upper and lower courses of the river. The former are often overwhelming in their gloomy grandeur, and I was induced to linger long in the pass and made many side excursions up the valleys of the streams which run into the main river. I should probably have spent even more time here than I did, but for the fact

that I got rid of a great part of my stores to passing caravans which overtook me, and made such tempting offers for many articles of which they were in want, that I could not resist the temptation of doing a little trade. I was consequently obliged to hurry on to Salt Lake to endeavour to replenish.

As the spring advanced the game became wild, shy, and difficult of approach, and after a time none were seen near the route of the passing caravan. In the excursions alluded to above, however, I met many grizzlies and other bears, as well as other game; it was evident, therefore, that they had only been driven away from the track by the increased traffic, and that no actual migration had taken place. I may mention here that a very few years afterwards I ascertained that the bears in this district had undergone a woful thinning, having been shot down wantonly, and even destroyed by poison and traps by the herdsmen. The extermination of the buffalo (bison) caused the bulk of the professional hunters to forsake this region, consequently the bears and other game had no protectors. This may seem a strange remark, but it is a fact that, generally, no men were stricter in preventing wanton destruction of game than the hunters. It was not the professional hunters who exterminated the buffalo, but those men who every season became hunters for the occasion, and met the game on its migratory journey. The latter were always looked at askance by the real hunters, and quarrels were frequent among them. They were for the most part tenderfeet and scamps; and if the hunting failed them, not unfrequently did a little brigandage to make up for their loss. The genuine hunter, on the other hand, was always an honest fellow.

I think that I have already remarked that there appears to be considerable latitude in the breeding-time of the grizzly bear. I noticed, however, that in the months of May and June they were pairing; and I

seldom met solitary ones at this time. I am able to state, also, that they often pair before they are full-grown; and I have seen full-grown females with three parts grown males with them. Some pairs had half-grown young ones with them. I conclude from this and other circumstances, therefore, that the grizzly takes two years to arrive at full growth, and that the female probably drives away the first pair of young (they are usually in pairs) when she is about to bear a second family. That they remain with the parents for a lengthened period is certain, for I have often seen two nearly full-grown young ones with the old ones.

The grizzly is not a fierce animal if unmolested, and I never heard of one attacking a man without provocation. In districts where they have been much persecuted they become very shy and difficult of approach. The assertion that they rob graves is sheer nonsense, but they often bury the remains of their prey, apparently to hide it from other animals and birds of prey. I have passed close to them without provoking them. Sometimes the male would sit up on a rock to watch me, but never made any demonstration of attack. The female and young usually lost no time in getting away among the rocks, and, upon my advancing, would be followed by their sire. When wounded, however, they are very fierce and dangerous, and will follow their persecutor pertinaciously, which makes some hunters afraid to attack them. I always shot them with a muzzle-loading (breech-loaders were not in general use then) percussion gun, using eight drachms of powder and two balls in each barrel, and approaching near enough to make sure of my aim. If hit in the head, just behind the eye, they were killed instantly. Coolness and steadiness of aim are the two requisites. Possessed of these, bear-shooting, in my opinion, is not attended with much danger. I have occasionally shot them from a distance with the muzzle-loading Enfield rifle, but this weapon

does not kill so large and strong an animal very readily, and would be dangerous to use at close quarters unless you had several of them close to your hand that you might repeat the shot. I have never used a breech-loading rifle for killing game, and therefore cannot speak of its destructive power. I should think that it would be difficult to better the muzzle-loader, in which a varying charge of powder can be used, and which, at close quarters, has a tremendous penetrative power, and I have heard that such a weapon is preferred by many officers in India for tiger-shooting. Another point is that the conical bullet of a rifle often glances from a bone; the spherical ball of the muzzle-loader never does, but smashes it. However, the breech-loader is quickly recharged, which the percussion gun is not.

Many spots among the Rockies I found to be very well wooded, a species of pine predominating, but there were also maples, oaks, and several species of trees unknown to me, while some of the gullies were quite choked up with small growth and trailing plants, amongst which large numbers of snakes and birds harboured. The snakes were mostly of harmless varieties, but I saw one or two rattlesnakes. The rattlesnakes here, however, were remarkably small, not four feet long, but whether this was owing to locality, or to their not being full-grown, I cannot tell.

I was reminded of our English glades in several places by the continual cooing of pigeons, which had made their homes in the trees. Some of the pines were full of their nests. I counted as many as fifty on a single tree, while the birds swarmed in all directions for a considerable area. They were wood-pigeons, differing from ours only in having a small white mark, like a collar, on each side of the neck. The nests were roughly made of coarse grass and twigs without lining, though there were a few odd feathers on the upper surface. Some nests had young, some eggs, in most

cases two in number, but a few had only a single egg or young one.

Beside these pigeons in the lower grounds of the great South Pass, I saw some ground pigeons, or rather doves, I should think, of a species I first saw in Arizona, where a couple were shot; but I had no opportunity of studying their habits there. I never saw these birds in flocks, though they generally went in what appeared to be family parties of five or six. They were small birds of a brownish-grey colour, shot with metallic blue on the upper parts and of a greyish rose-tint beneath, much like a wood-pigeon. There were some blackish marks on the wings, but no white. They kept up a continual mourning coo like ringdoves, and seldom rose from the ground, though I have seen them perched in trees. I have watched these little birds for hours, and the male seems to be a terrible tyrant to his mate, continually worrying and pecking her. He, however, often feeds her when she is sitting in the nest, and takes a turn on the eggs himself. The nest is built on the ground, generally well concealed among rocks where there is a growth of brambles or nettles. The ground is scooped out from under it, and it consists merely of a loose wisp of dried grass with a few feathers by way of lining, evidently torn from the bird's own breast. The eggs resembled other pigeons' eggs, and were two in number, except in one case where I found two eggs and two unfledged young ones in the same nest. I suppose from this circumstance that the birds breed several times in succession, and that the two eggs had been somewhat prematurely laid before the first brood had left the nest. Many American pigeons breed at least half-a-dozen times in a season all through the spring, summer, and autumn months; and in the case of other species I have found eggs and young in the same nest. This dove is not abundant, perhaps because, breeding on the ground, the eggs and young must very frequently be found and

destroyed by snakes and other vermin. The old birds, too, fall victims; for observing a green snake very much distended, I killed it and found a hen bird entire in its stomach, which had doubtless been captured when sitting on her eggs. These doves do not breed in company like pigeons, and the female is easily recognised by the duller hues of her plumage.

There are many animals living at a considerable height up the slopes of the Rocky Mountains that you would scarcely expect to find in a mountainous district, amongst them the white-tailed deer, which is simply a variety of the common Virginian deer. I don't know if it is generally known how much this deer varies in different districts, or whether the varieties are classed as distinct species. No work that I have looked into is clear on that point; but the Virginian deer is found almost in every part of the States, yet differs wonderfully in size, but certainly in little else. This white-tailed deer differs most from the other varieties, but only does so in a trifling difference of colour, not worth mentioning, considering that the deer everywhere differs somewhat in colour as well as in size. In some districts it is very large, the bucks weighing as much as a couple of hundredweight; in other places they do not run to more than half that size. In general configuration they resemble our red deer, but the horns and the tail are different. The latter is very long for a deer, reaching to the bottom of the thighs. The horns sweep forward horizontally, forming a semicircle, while the tines are almost vertical. They change their coat summer and winter. In the summer they are reddish in colour, while the winter coat is long and dull grey. The smallest size of this deer is met with in the Southern States, and the largest in the Central. The white-tailed variety is a large animal generally, but differs in different places, which may not be situated farther than a few miles apart. Why it is called the Virginian deer I know not.

It would be as reasonable to call it by the name of any other State; and I am not sure that "the water-deer" would not be a good name for it, for it is remarkably fond of water, and always takes to river or lake when pursued, if it has the chance of so doing.

There are many small brooks in the neighbourhood of the South Pass trending towards the rivers of the valleys, many of them with rapid, tumultuous courses. The word "brook," by-the-bye, is a word I do not remember to have heard in the States. A small tributary, or a brook, is always a "creek," a palpable misnomer, which I do not adopt. Following the course of one of these brooks one day, I found it originated in a small pool or tarn, some two hundred yards across, buried amid the rocks, and overhung with trees so beautifully that it looked like a fairy haunt.

The water was covered with ducks and other water-fowl, and approaching cautiously in hopes of getting a shot, I stumbled almost on to the back of a white-tailed deer, which dashed away with a startling rush and leaped into the tarn. There was only one place where it could land, on account of the steepness of the surrounding rocks, and this it evidently knew, for it made straight for that spot, scrambled out of the water, shaking itself gracefully, and was out of sight among the trees in an instant.

In consequence of certain signs which I saw in that place, I lay in wait there that night, which happened to be moonlight. Nothing happened; so the next night I shifted my hiding-place to the other side of the landing-place, thinking that perhaps the deer had approached from the windward quarter and smelt me. They are very acute in this respect, and the wind was easterly—a wind which, I fancy, carries scent better than any other, or at least farther. This time the deer appeared, five in number, which was a pretty good herd. I have rarely seen more than four or five together. They took to the

water after drinking, and I left them undisturbed to watch their movements. They swam both across and round the pool, but did not catch scent of me, probably because I was much higher up among the rocks than they. They landed several times, always shaking the dripping water from their hides, and I had a good look at them at from thirty to forty yards, peeping out from between two blocks of rock. There were two young males and three does; and I have noticed that it is rare to see the old bucks with the does except at the rutting season, or in very severe weather, when they sometimes herd together to the number of sixty or eighty.

After watching them for a time, I shot the largest of the two bucks, which appeared to be in good condition; and at the explosion of the gun the others sprang away with lightning speed, one of the does jumping at least six feet in the air, seemingly from sheer fright. The one I had killed was already fat and in good condition, though it was still early in the spring.

These white-tailed deer are seldom short of food, for they not only feed on leaves, grass, and herbage, but also on acorns, wild rice, and beech-mast. I have often seen them in shallow water near the Mississippi wading after the wild rice, and sometimes surrounded by flocks of wild-fowl swimming around them as unconcernedly as tame ducks round cows in the farmyard pond. When there is snow on the ground, the deer often assemble under the trees and scrape it away with their feet to find the acorns, but this kind of food does not improve the venison. Deer, swine, and peccaries, which feed on acorns and mast, are much afflicted with "kernel," as the hunters call it, in the flesh.

White-tailed deer, like all the other varieties of Virginian deer, are very shy and difficult of approach, though this is probably the result of much persecution, since I found them tamer in wild, outlying districts. The bucks fight desperately at the pairing time, and sometimes one

of the combatants loses his life. The buck seems to be content with a single doe; at all events, I have only seen them in pairs at the breeding season. Like most other deer, the white-tail can often be induced to come within shot by displaying a fluttering coloured rag, or flashing the sun's rays on a small mirror. The marksman, however, must keep out of sight, and take care to have the wind against him, for on the slightest indication of danger the deer speed away like hares.

As to hares, you may find some very large ones in this part of the Rockies, and they are not difficult of approach. I may just add that I found the white-tailed deer throughout that part of the Far West which I visited, and in some parts of California and Colorado it was very plentiful in 1875. When I met with it in the Rockies, I saw several does with a couple of small fawns with them, and most of the does seemed to be with young. May, therefore, must be the breeding-time.

In the same districts—that is, throughout those parts of the Rocky Mountains, Nevada, California, and Colorado, which I had the opportunity of visiting—I found another variety of the Virginian deer, viz., the black-tailed deer. The principal differences in this deer are in its horns and ears, the latter being much longer and bigger than in any other variety, insomuch that I am not sure that this is not a separate species. In habits and food it quite agrees with the other varieties, but seems more fond of rocky altitudes and broken, rough ground, for I never saw it that I can remember in the plains. Both the black-tail and the white-tail were seen by me in very elevated situations, almost at the summits of the highest mountains I succeeded in ascending. They were always in the neighbourhood of trees, however, especially in deep rocky ravines which were overgrown with woods, and I often had the opportunity of shooting them from above. As, however, it was evidently the breeding season, only a

few young bucks required for the venison were killed. As with the former variety, several of the does had two recently born fawns with them; but all my endeavours to find their lairs were fruitless. All the does of both varieties, and a third kind of deer, had just two young ones, never more.

This third deer met with in the Rockies was a mystery. It was only seen three times, and unfortunately, only does on those occasions, two of which had young. Their great size, and other features, induce me to think that they were elk—that is, the wapiti deer (which the American trappers and people always call the elk), not the moose. But I have been so repeatedly assured by hunters who know this district well that the elk is never found there, that I am in doubt. I might have settled the question by shooting down a specimen, but it would take something more important than a question of identity to induce me to fire at a harmless creature when with young. In spite of much assurance that I must have been mistaken, I am still of opinion that these deer might have been wapiti deer.

About the true elk itself, however, there can be no mistake. Anybody may recognise that, and it is—or was in 1875—pretty frequently to be found in the Rockies, along the lower slopes and in the wooded valleys. A description of the elk, or moose (its native name) can scarcely be necessary, for it is so well known from pictures and exhibitions in this country that few, if any, can be unacquainted with its general appearance. Its habits and distribution are another matter, and I here relate what little I know concerning those points. I should remark that all that is now stated about the moose and the two varieties of Virginian deer was not collected at South Pass, but I find it more convenient to group these deer together here than to break the course of my notes later on, and it may also be more convenient to the reader to find on one page all that he

can be told concerning an animal, rather than to have to gather up fragmentary items.

I am afraid that the moose, the wapiti, and many other deer, have undergone a sad thinning of numbers at the hands of reckless gunners during the last quarter of a century, and that unless very stringent laws are made in America for their preservation, the species will very shortly be exterminated. This is a sad thing, and grievous to the soul of every naturalist and lover of Nature; for although the venison of both the moose and the wapiti is of coarse grain and inferior flavour, they are noble animals, and their extinction will be a great loss to American scenery. I am satisfied that originally the moose roamed over the whole of North America, a part of Mexico excepted. Possibly it avoided the extreme Arctic portions of Hudson's Bay, Alaska, and Labrador; but I think it was an occasional visitor at least to within a very few miles of the northern coast-line, and it certainly inhabited permanently the southern portions of the countries I have named. As early as the period of my journey in 1875, however, it was already driven from large areas of these countries, while it had all but disappeared in all the Eastern States. It is an exceedingly shy animal, and speedily deserts districts in which it is much persecuted. In fact, I have known cases in which one of a party having been shot, the others have gone distances of from fifty or sixty to a hundred miles before resting permanently, or for any but the briefest spell of time. This is remarkable, for the moose is not a wandering deer. They are never found in herds, but live in family parties of three to seven or eight. Eight is the greatest number I have ever seen together. They occupy a certain district where they breed and feed, and but seldom wander outside its boundaries. If they do so at all, it is under the pressure of some extraordinary circumstance, as a severe blizzard, a flood, or a forest fire. When there is deep snow on the ground, these family parties form what the trappers call a "moose-yard." This

is generally some small dell or spot of ground thickly surrounded by tall trees and bushes, especially juniper bushes. Here they scrape away the snow, and live in a kind of confinement until the spring. They never willingly wander when there is snow on the ground, for a moose in deep snow is at the mercy of all its enemies. Even the wolves can then easily overcome it, while against the hunter it is completely powerless. Its long legs break through the frozen crust of the snow, and it can neither fight nor fly.

With regard to its distribution I have been at variance with several American naturalists; and I have seen in several works in this country assertions which, if correct, would show that I have given the habitat of the moose too great a latitude or extent. I have, however, dug up its horns and bones in Texas, Kentucky, on the Mississippi within less than a hundred miles of its delta, and in several places in Northern Mexico, notably near Monterey and Saltillo, where I found its bones in ravines and caverns at a considerable height up the slopes of the mountains. This seems to my mind conclusive evidence that these animals must formerly, and at no great distance of time, have occupied these countries. The assertion that the moose is a forest-haunting animal, and is never found on open plains, is in my opinion no argument. It is an animal exceedingly impatient of the presence of man, and may have been induced to forsake the prairies for the purpose of avoiding his much-feared presence. The assertion that the build of the animal shows that it is not adapted to living except by browsing is laughable. The giraffe itself can graze; and the grass of the American prairies, during the greater part of the year, towers far above the head of the moose. Besides, the moose does eat grass, and can graze with facility. The bulk of its food, however, consists of leaves, tender shoots, and bark. They seem to eat the leaves of any tree that comes in their way, but the juniper is a favourite. They often rear

up on their hind-legs to reach food that is high up on the trees, and they often assume this attitude for purposes of attack. Indeed, they appear to trust more to their forefeet than to their horns ; and I have met several hunters who have had narrow escapes through wounded moose suddenly rearing and striking downwards with terrific force.

The male moose pairs with one doe for life, and remains with her at all seasons. The young do not forsake their parents until they are two years old, so there is usually one or two half-grown calves in the party. Two fawns are generally born at a time, but sometimes only one. I have never seen a doe with a greater number than two that appeared to be of one birth, but I have heard from hunters of their occasionally having three and four. I am inclined to doubt this, and think my informants must have been mistaken. Occasionally there are two full-grown does in a family, and sometimes a young male, which appears to have paired with one of the does. Solitary males are those which have lost their does, or are too old for the cares of a family ; they are very rarely met with, as are solitary does.

I have never known the moose to take to the water and swim, but they sometimes stand knee deep in it to feed on the lush herbage. However, I have received so many assurances from hunters and others that the moose does frequently enter the water and swim well, that I cannot doubt the fact ; and can only say that it is singular I should have never observed them do so, watching them so closely as I have done. It is true that all deer take to the water readily, but I cannot help thinking that the moose is not so partial to it as most species.

There is yet a third point on which I am quite at variance with some authorities who have published accounts of the moose. I find some popular works describe it not only as the largest living species of deer, but as equal in size to the extinct Irish elk, which it certainly is not. I read of their height as being seven

or eight feet, and sometimes even greater. Even the American and Canadian trappers, who ought to know better, assert that they have seen specimens measuring fully eight feet at the shoulder. The truth is that full-grown males measure about six feet at the shoulder, which is several inches higher than the hips; and they never exceed this height by more than two or three inches. The weight is eight or nine hundredweight, but the dimension and weight of the does is very much less.

One appendage of the moose has puzzled me very much. This is a long, purse-shaped pouch on the throat of the males and many of the females. It is seven or eight inches long, covered with long, dark-coloured hair, and looks like a hanging tuft of hair, for which I mistook it until I had examined it. I never found any substance or fluid in these pouches, but they are capable of great dilatation, and will hold at least a quart of water. I cannot help thinking that they were originally intended for the storage of fluid, and that probably the animal in an earlier stage of its existence was an inhabitant of desert plains. At all events, Nature must have had some object in furnishing the animal with this appendage, for which it seems now to have no use whatever.

The moose can run with great swiftness, and makes its way with ease through dense forests where man cannot progress except with difficulty. Its horns seem to offer no impediment to it in traversing woods, however dense, and it shows great intelligence and cunning in endeavouring to avoid its pursuer. It appears to glide through the woods, so silently does it run. It never strikes against the branches, and you cannot hear its footfalls. It always makes desperate efforts to escape the hunter, and never turns on him unless wounded, or its retreat is cut off. The doe will not forsake her young until the last extremity, and some hunters say she will fight in their defence.

The large fleshy snout of the moose, like the hump of the bison, is considered a delicious morsel by the

hunter, and is cooked in the same way, viz., wrapped in a piece of the animal's hide, buried in a slight hollow scraped in the ground, and roasted by having a large fire made above it. It is certainly a toothsome dish, and one I have often longed for since it is no longer in my power to enjoy it. The flesh of other parts of the moose much resembles lean beef in appearance, but is drier in the eating. There is seldom much fat on the animal, and its venison has sometimes a bitterish smack, evidently the result of feeding on young pine shoots, which it will do with avidity whenever it finds them growing within its reach. Finally, I would remark, that although I have found recent remains (bones and horns) of the moose at a considerable height on the mountains of several parts of America and North Mexico (perhaps as high as 3000 feet above the sea), the living animal does not appear to take kindly to elevated districts. It was fairly abundant about the northern part of the Rockies at the time of which I am writing, and I found it more or less wherever there were woods in that region, but very sparsely at a greater elevation above the neighbouring valleys than some twelve or fifteen hundred feet.

On the east side of the Rockies I discovered a herd of nineteen wild swine, and a young boar was shot for food, and made excellent pork. These wild pigs were the descendants of some escaped domestic swine, and the discovery was interesting, as showing that, in the course of time, the American continent will probably become the home of a new quadruped.

While in this district I exerted myself much to obtain a big-horn sheep, but I never had the good fortune to even sight that remarkable animal. It inhabits the highest rocks, where I was physically unable to follow it, and is also so very acute that it often smells, and perhaps sees, the hunter long before he comes in sight of it, and retires accordingly to safer lurking-places.

I have more than once referred to the scarcity of

small birds on the great plains of America. This I found not to be the case in the wooded Rockies; and even in the bare districts several species were noted fluttering about the broken rocks and gullies. While working along the lower ranges on the west side, I often heard the note of a bird which kept itself remarkably well hid among the trees, insomuch that I heard it many times before I could discover it. Morning after morning our ears were greeted with a monotonous coo-coo-coo, coo-coo-coo, repeated continuously for a long time, as if the bird were following us, which I am inclined to think it was; otherwise it was very abundant in this district, although it could not be seen. At first I was inclined to think that it must be a pigeon or dove, the note having a great resemblance to that of those birds, though uttered in a shorter, crisper tone. At length I shot the bird as it flew out of a tree, and it proved to be a cuckoo. A close examination of the bird satisfied me of that beyond a doubt. Beak, feet, shy habit, and general contour of the bird, all were those of a cuckoo. The bird was perhaps a trifle larger than the common English cuckoo, olive in colour, with white throat, chest, and belly, and white tips to all the tail feathers except the two central ones. The crop was full of caterpillars and insects, amongst which I recognised several species of tree beetles, wood-lice, moths (two kinds), butterflies (the wings rejected), grasshoppers, and ants. Several of these insects were in the passage between the crop and the gizzard, and none of them except the moths and butterflies were much mutilated. The bird was a hen, for there was a cluster of small eggs in the ovarium, numbering about thirty, varying in size from a pin's head to a small bean. At the time this bird was shot the waggon was only moving some four or five miles a day, as I was making frequent excursions in different directions. For two entire days we heard nothing more of the cuckoo, but early on the morning of the third day the coo-coo-cooing

recommenced, and the bird was seen in glimpses occasionally for a week or eight days. Then we appeared to have got out of its district, for nothing more was heard of it.

All the time we were in the neighbourhood of the Rockies the whip-poor-will was frequently heard, and now and then seen. This bird uttered its extraordinary and melancholy-producing cry chiefly at night, commencing at dusk and continuing until an early hour in the morning. Very rarely it was heard in the daytime, and only when the weather was dull and rainy. It is a bird about the size of a jay, with long wings, crossed over the back when at rest, and, both flying and perched, remarkably like a large swift. The plumage is so much mottled and marked that I doubt if a comprehensible description of it can be conveyed in words. It is a dull-coloured but beautiful bird, and one of the most harmless creatures that fly, though popular ignorance has propagated a different opinion. It has been accused of sucking the milk from the udders of cows and goats, from whence it has received one of its names. It may be seen hovering under cows and goats, it is true, and pecking at their udders as they lay extended in the meadow; but its sole object is to secure the insects which infest and torment the poor animals; and the patient, quiet way in which cattle submit to the operation will convince any reasonable observer that they are grateful enough for the bird's attention. The bird's food consists entirely of insects—mostly flying ones—and it has no power of suction.

I should mention that the gape of the goat-sucker is very wide, even more than that of the swallow and swift tribe, thus demonstrating that it was the intention of Nature that the bird should feed while moving swiftly on the wing; and the mention of swifts reminds me that many pied swifts were seen flying in the air on the western side of the Rockies. They were observed over a very considerable area, harbouring where there were gullies and

cliffs, where they bred, not in holes formed by themselves, but in the natural crevices of the rock, and so high and inaccessible in position that it was impossible to reach them without the aid of a long ladder, which, of course, we were not provided with. The birds also flew very high, so that sometimes they could scarcely be followed by the eye.

Two distinct species of kingfisher were noticed about the mountain streams in the Rockies, but I have not succeeded in identifying either of them. Both were very beautiful birds, and one was bright green in colour, shining with a metallic gleam. The smaller, about the size of the English kingfisher, was light grey on the under parts with a very faint tinge of rose-colour. The other was much larger and scarcer, with stouter bill and legs, and darker on the breast, with a white belly.

After crossing and leaving the region of the Rockies, we made a straight line for Salt Lake City, and I think that this was the most trying and monotonous journey I ever made. The desert of the centre of the State is certainly the most appalling in the Northern Continent. I took an erratic course across it, that is, not the road usually followed, which, even at that time, was well marked by bones if by nothing else, and in my opinion is a far more desolate region than the much-talked-of Colorado Desert. A great part of the country we passed through was quite flat, at least there was no perceptible undulation, and for miles there was neither tree nor bush visible—not one; and although I cannot say positively that anywhere there was an absolute absence of herbage, I should think that even a goat would find it a hard struggle to pick up a living in this country. Much of the desert was stony, in places looking as if the stones had been roughly shot down from carts, and lying so thickly as to offer much impediment to our progress. There was no sign anywhere that this district had ever been traversed before, and it is not improbable that we were the first two white

men who ever crossed it. There was no water whatever in this district, and no evidence that any ever settled here. In most desolate regions in America there are pools, often extending to the size of lakes, at some period of the year, and when the sun and wind have dried these pools up their beds can easily be traced. Here we saw no such traces of the presence of water, or of the action of rain at any season or time, and if it had not been for our foresight in bringing with us as much as we could carry in barrels, we should have been in a sorry, if not in a dangerous, plight. The bad lands of Wyoming are almost a garden of Eden compared with this place. Where the ground was not so stony the earth was starred with great cracks and fissures, some of them extending hundreds of yards, and necessitating wide detours to avoid them. Some of the fissures gaped five or six feet wide, and were so deep that a man or horse slipping into them could never have been released, supposing they survived the fall. The ground appeared to be a kind of clay, and was as hard as the frozen regions of the extreme north. This desert must ever be, in my opinion, a "bad land" of the most unredeemable type. Indeed, it can never be inhabited permanently, and I never saw the slightest evidence that there is mineral wealth there. In places there were a few tufts of the most poverty-struck-looking grass that I ever saw. There was also an insignificant creeping weed, bearing a minute brick-red flower, a plant, not a foot high, resembling wild camomile, and a brown-leaved, dingy member of the dock family. All these were scattered in solitary tufts, and hardly noticeable, and would not have been seen at all frequently unless diligently sought for. There were also a few miserable dwarf caricatures of the cacti seen much farther south, but so scattered and few in number as to indicate that they were the extreme northern outposts of the tribe.

There was none of that undulation of the ground in

this part of the Utah desert so characteristic of the southern prairies, and the distance over which the eye could wander sometimes appeared to be very great. Occasionally the horizon was obscured by a mist, occasioned, I think, by dust raised by the breeze, and sometimes the mirage phenomenon was observed, showing dense black forests in the distance with a background of bare mountains. This illusion would last for hours, generally dissolving about midday, when the heat was terrific, and a dancing haze took the place of the mirage, limiting our range of vision to a mile or two around, until towards evening, when our eyes were often regaled by a sunset of the grandest description, turning the whole sky and landscape into a garden of crimson and gold, purple and fiery scarlet, and dazzling the eyes so that we became almost blind to objects immediately at hand.

There was generally a breeze towards evening, frequently freshening into a strong wind, occasioning dust-storms, which were a source of delay and danger to us, since it was impossible to proceed while they lasted. A remarkable feature of these storms was that while the air was filled with dense clouds of gritty dust, which flew with force enough to make exposed parts bleed, and which it was impossible to face, very little drifted dust could be seen after the storm was over. All seemed to blow away into far-off regions. These storms were very terrifying to the mules, and we had several narrow escapes from disaster through their bolting. Fortunately I had a very experienced mule-driver, and the beasts being poorly fed at this time, were soon exhausted and brought under control. One, however, broke its leg and had to be shot. It is such accidents as this that whiten the tracks in desert lands with the bones of animals, and, not unfrequently, of men too. Occasionally these wind-storms were accompanied by thunder and lightning, but never by a single drop of rain. Stones as large as hen's eggs flew along the ground in the midst of what I may

describe as dust-currents, and some were even forced through the covering of the van. The damage done was serious enough to put us to much inconvenience, and neither of my companions, born in America and bred there, had ever heard of such storms as this. From what I afterwards learned at Salt Lake and in California, there can be no doubt that dust-storms of the severity of those I have described are exceptional. Many gentlemen at San Francisco were much surprised at my experiences, never having heard of anything like them before. But the year 1875 was exceptional in several ways in many parts of America.

I may mention that two pet monkeys I had with me, which I had procured from sailors at New Orleans several years before, were greatly terrified at these storms and hid themselves amongst the skins in the waggon. One of them died before we reached Salt Lake City, killed, I think, by the exceedingly cold nights in the desert. For though the days were fearfully hot, it was necessary to bury ourselves under many blankets and skins at night to preserve a little warmth. My monkeys suffered dreadfully, and used to huddle themselves close up to me at night for the sake of warmth. The one that died was in a torpid state the day before. When put in the mid-day sun he revived a little, but towards evening he crept under my jacket and remained very quiet for a long time. I had been much in the habit of shaking hands with the little animal, and about sundown he put out his little paw, and with it resting in my hand died so quietly that I did not notice for some time that he was gone. The other was much distressed at his death, and did not survive him longer than five or six weeks. These monkeys were both males, but lived together on most affectionate terms, and would follow me wherever I went. They were capuchin monkeys from Brazil. Originally I had five of them. One died previously, and two were begged by ladies. I could not learn whether they were taken young or not. The captain from whom I pur-

chased them was of opinion that they had been trapped. They were all males, and all very tame when they came into my possession, and they never showed any mischievous tendencies. They were most affectionate little creatures, full of amusing and interesting ways, and were never spiteful, though they marked and remembered any person who annoyed them, and would fly to me the instant he appeared. They had a particular antipathy to my black servant, the outcome, I have no doubt, of his ill-usage. I have noticed a tendency among mindless people to hold in contempt men who show more than an ordinary care for the lower creatures, and I think the most vicious enemy I ever had was a man whom I rebuked for his brutality to a mare, and who hated me in consequence. The spectacle of my pet monkeys clinging to me had a peculiarly exasperating effect on the cowboys, and the remarks they would address to me at such times were quite unprintable. This is one of the failings of the American character; they are not at all so merciful towards the dumb creature as the English. An American thinks nothing of spurring a horse to death unless it is of some great value. He is as careful as an English owner of his racehorses; but a mustang!! This failing cannot be altogether the result of lack of education, for consider our brave soldiers and sailors, who are drawn from the humble classes almost to a man, and yet who are never so happy as when teaching and caring for pets, every regiment or ship in our service invariably possessing several. All Americans are alike in this respect, the inhabitants of the Southern continent being the most cruel and inconsiderate. No man in England would dare so much as mount a horse wearing such spurs as are used by the gauchos of South America. These spurs are horrible instruments of torture, with which the rider can disembowel the horse, if he is so inclined; a hellish act, which I have actually known to have been committed by a ranche-rider who had lost his temper.

There is no true lark in America,¹ at least I never met with a bird of this genus, or heard of it, but there is a bird that in many points resembles a lark in the Utah desert. This is remarkable; for I have repeatedly noticed the absence of small birds in the American plains. Here, in the most desert spot I have seen on the continent, there was actually a greater amount of animal life than I had ever seen on the prairies. The bird mentioned here was rather larger than the English skylark, of similar colours, but not so much mottled or marked, and with a stouter bill. The toes were arranged like those of the lark, and the claws rather long. It ran along the ground rapidly, and when it took wing flew low in a straight line, soon alighting again. It was a solitary bird, generally appearing alone, but sometimes in pairs, and was never seen more frequently than once or twice in the course of the day. Its note was a soft plaintive piping, and sometimes one would follow the waggon for hours at a time. I searched in vain for the nest, which must, therefore, be remarkably well hid if they breed in this desert, where there are very few hiding-places.

Occasionally we saw parties of four or five white-tailed deer, and as we approached the confines of the desert region where herbage was more plentiful, a few elk (wapiti deer) were sighted. On the whole, large animals and birds were in sufficient numbers to puzzle me as to how they could subsist in such a sterile district, and still more where they obtained the necessary water. The Utah desert, where we crossed it, probably extended a hundred miles without a break, and in the whole distance, which we were a week traversing, we saw not a drop of water. The mules had to be content with two quarts each per day, which we carried with us; and we could not indulge in a wash for the whole of that time. The first water we came to was a "soda lake," which was not,

¹ I now know that there is a typical lark in N. America, and one in S. America.

of course, drinkable, and in this place there were several large saline districts covered with an incrustation of salt. Even here there was a scant herbage of peculiar appearance, and a small fungus of unpleasant smell was found under the stones.

Two lynxes were seen while crossing the desert, and many large hares, while the Californian condor was daily hovering above us, and occasionally pitching on the plains, but never very near us. These birds probably returned to the mountains to roost every night, a hundred-mile flight being a mere trifle to any strong-winged bird. I have tried to time the flight of these birds, not very successfully perhaps. Years after this journey took place, I saw them outstrip trains on the great Pacific Railway, which were going at a greater rate than forty miles an hour. So graceful and exertionless was the flight of these splendid birds, that it was difficult to realise they were moving so swiftly, yet the progress could not have been less than sixty miles an hour, and was, I think, much more. Flying directly from you, with their heavy, measured wing-strokes, if they do not turn, they go completely out of sight in a minute and a half, and they must be visible at a considerably greater distance than a mile and a half. In my opinion their flight is swifter than that of the condor of the Andes, and quite as graceful. When flying they repeatedly utter a loud scream-like note.

Apparently there is nothing in nature that is inimical to every form of animal or vegetable life, for the alkaline lake referred to above was inhabited by several species of molluscs, and a worm-like creature that I was unable to classify. Some bitterns and ducks haunting the banks of the lake were probably in search of these. The ducks were the shoveller, and a much smaller duck which might have been a widgeon, but they were so wild that none could be shot. All the wildfowl were difficult of approach here, there being no cover to hide the gunner.

There was also a black, or very dark-coloured duck, the females of which species were decidedly grey. I noticed that all these ducks assembled in great flocks at evening time and flew away to the eastwards.

From this lake, which was less than a mile across, and not laid down in the map I carried, ranges of mountains were visible northward and westward. In other directions the verge of the horizon showed a dark purplish outline, meeting the clouds, so that it was, in the early part of the day, difficult to perceive where the land-line ended and the sky commenced. The ground was hard and stony still, and the grass dry as hay, but more abundant near the lake than farther in the desert. The mules ate this withered grass eagerly, and I observed the hares doing the same. A few bushes were visible here, scattered at long intervals about the plain, but nothing that could be called a tree. Insect life was not scarce, but it was not remarkable enough to call for special mention. A few small centipedes were found lurking under the stones, with many small beetles, a few of which were brightly coloured—green and metallic red. There were also ants, green flies, blue flies, minute ground spiders, and near the lake our old friends, or enemies rather, the mosquitoes. Under the bushes there lurked small moths, which I could not distinguish from the clothes-moth which is so destructive at home. Down to this time we had not seen a reptile of any species since leaving the neighbourhood of the Rockies.

Our two barrels of water being nearly exhausted, it was necessary for us to seek a fresh supply at once. As the most likely direction in which to find it, we made for the mountains, which I supposed to be forty miles distant, as they appeared to our vision but little denser than a blue haze. As haste was imperative, we started at daybreak and travelled till sundown, but the ground was so rough and stony, and so many detours had to be made to avoid impassable places, that I doubt if we made

more than some twelve to fifteen miles in a direct line towards the mountains. However, the next day the ground began to show signs of a considerable rise above the plain, and was fairly covered with sage bushes. We passed two more small pools of alkaline water, scarcely larger than ponds and quite undrinkable. There were lots of waterfowl about them, but they kept far out of shot reach. We shot a sage-hen, however, and several more were seen, some of which had coveys of young with them, which were old enough to fly, the time being the middle of June.

The sage-hen is the largest member of the grouse family which I have met with in the States. I have only seen it in the West, and it is decidedly a desert-haunting bird. The cock bird has a pair of inflatable sacs situated at the sides of his throat, and a fine display he makes of himself when courting his mistress, or rather mistresses, for he has generally three or four, whom he forsakes as soon as the breeding season is over. The most remarkable feature in this bird's plumage is the tail, which is as long as a pheasant's and much resembles it. It is perhaps worthy of note that the tail of the sand-grouse of Asia, another desert-inhabiting species, also resembles that of a pheasant. The bird we shot, a cock, weighed over seven pounds, which will give the reader a good idea of its size and value as a game-bird. They are easily shot as they run on the ground, but it is difficult to flush them, and where the bushes grow thickly they are hard to find.

A remarkable instance of sagacity, instinct, or sense now occurred on the part of our mules. For some time these animals had been very restless, and showed a strong desire to take a course of their own choosing. Half suspecting the cause, I at length permitted them to do so, and gave them their heads, and in a couple of hours they drew the waggon to a small spring of sweet water gushing from beneath some rocks in a gully. The poor animals

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had been at this time forty-eight hours without water, so it may be easily imagined with what joy man and beast made this most desirable discovery. In the gully, too, there was fresh grass, and for the first time since entering this region the mules had a full feed.

The depth of the gully was perhaps fifty feet below the surrounding country, and the rill of water, which sprang from under a cluster of large rocks at the north-east corner, was at most two inches deep. Indeed, the mules soon churned it into a quagmire with their feet, and we had to water them from a bucket. Three small orifices, at a height of two feet from the ground, poured forth water at the rate of about a gallon a minute. Probably earlier in the year there was a more abundant supply, and later in the summer it is equally probable that the spring was entirely dry. Yet it was astonishing what verdure this scanty rill had been the means of moistening in the gully, which itself, I think, owed its existence to the action of the water. Probably there was a crack in the ground here in the first place, which had been gradually widened and deepened by the washing away of the more soluble portions of the earth, leaving a wild medley of broken and jagged rocks in the hollow. Seeds, driven by the wind, would naturally find a resting place in this hollow, and others would be brought by birds, and there find the moisture necessary for their fructifying and growth, so that the spot was now choked by a dense growth of bushes and herbs, with several trees intermixed, and swarmed with animal life, attracted by the vegetation. Insects predominated, but there were here many reptiles, and for the first time since we entered the territory we saw snakes, which were Troublesomely numerous. I killed a rattlesnake which was eight feet long, about the largest I ever saw in any part of the States, and others nearly as long were seen. The rocks abounding in fissures and holes, afforded them convenient lurking-places. Among the other snakes, all of which

were very small, was a dark green one, which I had frequently seen in most of the Middle States on the other side of the Rockies.

In this gully were found no fewer than five species of small lizards, all of which were new to me, and none of which I succeeded in identifying. The smallest of them, which was also the most numerous, was not three inches long, tail included. It was seldom seen on the ground, running about the bushes with great activity, catching the flies and often appearing to be at play. In colour a bright green, it was mottled and striped with a dusky hue, and further marked with a line of black and yellow spots along each side, extending to the end of the tail. It was greatly persecuted by the smaller snakes, who preyed on it greedily. This lizard is local about this region, and as far south as three hundred miles beyond Utah. I saw it occasionally during my journey, always in such spots as I have been describing (wet holes and gullies), and always in great numbers together. A singular feature in its distribution was that we seldom found it in adjoining gullies. There would be thousands in one small ravine, and though the whole country were intersected with holes, cracks, and gullies, not another could be found for perhaps a distance of twenty or thirty miles.

Among the insects found in this gully were three kinds of plant-lice, two large moths, over a hundred species of diptera, fourteen caterpillars, eleven butterflies, fourteen beetles, and thirty-seven arachnida. One of the moths was a hawk-moth, grey with black and cream markings. It was nearly an inch and a half long, and harboured in the rocks. The other moth was an inch long, and only one was found on the trunk of one of the pine trees. It was a sort of cinnamon-brown colour, much like the trunk on which it rested. Several of the butterflies were beautifully marked with black, brown, orange, crimson, and yellow, and one kind had its wings shaped

like the swallow-tailed butterfly. The caterpillars, too, were mostly distinguished by their brilliant colouring. The arachnida included three centipedes, a scorpion, and a harvest spider; the rest were small spiders. It will perhaps have been noticed how frequently I have referred to spiders in this work. In fact, all over America, North and South, spiders seem to be in an excess of numbers, both of species and of individuals. The largest spiders in the world are found in America, and possibly the smallest too, the range of size being very great, from the giant bird-eater to species so small that they can scarcely be discerned by the naked eye. Of the species found in our gully nothing remarkable can be recorded. The largest was a geometrical spider, with a body as big in diameter as a sixpence and a web a foot square. One of the smaller kinds was a hunter, with a habit I have not noticed in other hunters. Its haunt was on the face of the rocks, and it frequently dropped, holding itself suspended by a single thread, seemingly for the purpose of reconnoitring or searching for prey. After remaining suspended for the space of a minute, it quickly hauled itself up again and resumed its wandering over the rocks. I saw it sometimes feeding on flies of at least three times its own bulk. It was very courageous, and fought frequently with the black ants it met. On one occasion I saw one of these little spiders seize a black ant twice its own size and drop it clean from the face of the rock on which they had met. This is very remarkable, seeing that, as a rule, the tribe of ants prey on spiders and attack and destroy some of very large size, though it is true that in this case the ants attack in swarms. The spiders and other creatures are aware of the power of the ants, and often fly before them terror-struck.

Of the coleoptera little more than has already been said remains to be recorded. None of the fourteen species found in our gully were peculiar to it, but had already been noticed on the surrounding plains. Alto-

gether nearly eighty species were found in the Utah desert. Not being a specialist in this branch of natural history, I cannot give those details which would perhaps be acceptable to the entomologist. Only three of the eighty species were clearly recognised as feeders on carrion. Several were found under stones and rocks, some under the bark of bushes and trees (pines in the gully), and some on it, and two were small water-beetles found in the water of the alkaline pools. As this remarkable circumstance may indicate that they are new species, I give what information about them I succeeded in collecting.

The first was about the third of an inch in length, elegantly oval in shape, and dark grey in colour. It lurked under stones in the water in parties of about a dozen together, of all sizes—that is, young and old. Of its food or habits I can give no particulars. The second water-beetle was about the same size as the first, also broadly oval in shape and dull black in colour. It swam freely and quickly, but only scanty numbers could be seen anywhere. Food and habits unknown. Some of both species were put in a pot with water from the lake for preservation. At the end of the third day all the grey species were dead; whether because I had neglected to provide them with a stone to hide under, or whether killed by their relatives, I cannot say. The black kind lived and thrived, though unprovided with any food, until destroyed in an accident to be hereafter mentioned.

The only mammal seen in the gully was a mouse, common all over Utah, Colorado, California, and the region generally. It had frequently been seen and caught in the most arid parts of the desert.

Among the herbage was a creature that puzzled me greatly. At first I thought it was a slug, but I soon perceived that in that supposition I was mistaken. It was a soft-bodied creature about two inches long, striped with a pale claret colour on a greyish ground. It

was furnished with a tube-like mouth on the under surface, but I could not discover the nature of its food. I had an impression, however, that it fed on the decayed herbage that had rotted to a pulp-like consistence in the moisture from the rill. They were only found where the herbage was very thick and damp, but never actually in the water. I put some of them into a small bottle of spirits with the idea of preservation; they quickly dissolved away, however, leaving nothing behind except a muddy sediment and a few scarcely perceptible films. I cannot even conjecture to what class this creature belongs. It may possibly be the larva of some unknown marsh-frequenting moth. The whole bottom of the gully was in a damp or sodden state. Though I looked out for this creature often afterwards, I never saw it elsewhere.

We might have called this spot Bird Gully. It was quite a rendezvous for them. All the trees had nests in them, there being more than twenty in one, and many more in the bushes. On the ground, among the herbage too, and in the rocks were other nests. Most of them were empty, the young having fled, or they were old nests. There was every indication that this was a favourite breeding-place for all the birds in the district, and helps to explain how this desert could be so well supplied with birds and animals with no perceptible hiding-places in which to produce and rear their young. It now became clear that they resorted to isolated spots similar to this (a sort of fastness) which were suited to that purpose, and it is probable that they wandered from hence for many miles around, perhaps all over the desert we had crossed, returning to roost at night to this cosy place, for I am convinced that many species of even small birds can, and do, make exceedingly long journeys in the course of a single day in search of food. They also sometimes remain from home days, and occasionally weeks, returning at uncertain and irregular intervals. I think all birds have a place that they consider as a kind

of base or home, where they breed, as a rule, if undisturbed, and which they never entirely forsake. I have noticed that birds of many species, birds of prey, water-fowl, sea-birds, rooks, and crows, some of which take journeys of a thousand miles and more (apart from periodical migrations), have spots to which they return at uncertain intervals as a mere matter of fancy or liking, as well as at seasonal periods for the purpose of breeding. If undisturbed, these territorial connections, if I may so term them, last for life. When molested, they seek for and attach themselves to other spots, but not unfrequently return to the old home after an interval, which may be of several years' duration, thus giving an extra evidence of the correctness of my opinion that animals *think*. How otherwise could they remember? In a lesser degree these remarks are true of smaller birds, such as warblers, finches, &c., but many of these being short-winged birds, are, of course, incapable of taking very long journeys.

Among the birds found here was the killdeer, a small kind of plover, not, I was afterwards told, hitherto known to inhabit this locality. I discovered a nesting place with four young ones in it fully fledged, and so active that they could not be caught. Only a few odd pairs of the bird were seen, and it is quite likely that it is migratory here. "Killdeer" is said to be a trapper's localism for it, on account of the bird revealing the presence of deer by uttering its cry over them. A more likely explanation is that the name is derived from the bird's cry, "killdeer, killdeer." My opinion is that the sharp hoofs of the deer, by cutting up the earth, reveal the worms and insects on which the killdeer feeds, and so attract the birds, as cattle attract starlings, and sheep fieldfares.

Seen in the gully, where it certainly breeds to some extent, but more numerous in the open country, as we approached the elevated land was a species of crested

quail. This quail was the most partridge-like in form of all the quails I have seen; but its most remarkable feature was that the feathers of the breast and belly were variegated dark and white in such a manner that the pattern formed resembled the markings of the scales of a fish. There was a well-formed black gorget on the throat, and a peculiar black line over and behind the eye. The bird was seen in flocks of sixty or seventy on the plains, and though rather shy, many were shot, as it preferred trying to escape by running rather than by flight.

The nests in the trees were all empty, with one exception, and no birds were ever seen near them. They were composed of dried grass and lichens, lined with deer-hair, and a few fragments of egg-shell found in some of them were light blue mottled with brown and grey. The majority of the nests appeared to belong to some bird of social habits; but there were a few nests of looser construction, one lined with feathers and another with vegetable down, and yet another composed of mosses and hair as beautifully constructed as that of the chaffinch. One nest standing alone in a tree, quite close to the one which contained so many nests, was constructed of twigs and plant-roots and contained two hawk's eggs, curiously mottled with reddish spots and blotches of bluish black. The birds were very little disturbed by our presence under the tree, and the hen did not forsake her nest until my man had climbed almost to within reach of her. They were small falcons, known in America as the Aplomado. As the hen was still sitting the morning after her eggs had been taken, I directed my man to climb up again, when a third egg was found in the nest, which must have been laid during the night or early morning. I have often taken eggs of many species of birds which must have been laid after the bird went to roost, or before four o'clock in the morning, but in no instance could I ascertain that any bird lays between two and eight o'clock in the afternoon. The most usual time of laying, according to my notes of

nearly seven hundred species of birds of prey, waterfowl, game birds, and finches, is between ten and twelve in the forenoon. In very rare cases birds lay two eggs within the twelve hours—never more; and I never came across any malformation in a wild bird's egg other than finding one remarkably small—one in a clutch, which is of frequent occurrence; so frequent, indeed, that I doubt if it is correctly referred to as a malformation. Double eggs and double yolks seem to be an abnormal production of domestic birds, and are, in my opinion, a result of the altered state of existence induced by confinement.

In addition to the lark-like bird already described as inhabiting the desert, and which was seen here once or twice, there were two or three other finches, one of which was a sparrow-like bird, whose appearance and colouring coincided with the bird called a desert-finch in Europe; that is to say, it was brown above, greyish-brown below, with a washing, as it were, of rose-pink. A handsome little bird, met with in several parts of the West. Three of its nests were found at a subsequent period. Two contained young birds (four and five), and the third five green eggs spotted sparingly with light red. The bird, it was said at Salt Lake, breeds four or five times a season.

As we continued our journey from this spot we passed several other gullies, some of which were mere jagged holes in the earth. The only vegetation any of them contained was an odd bush or two or a handful of grass, showing that the fertility of the one we had halted at was entirely due to the accident of there being a spring of water there. The higher the ground became the more frequent were these ravines and the larger and deeper. In only one other did we find any water, a small mountain stream rushing through it, and here again there was a thicket of bushes with an odd pine or two. As I became convinced that we were not holding a true course for Salt Lake City, which I wished to visit, we had to retrace our steps for some distance and take a more

westerly road, which soon brought us on to the plains again. A series of provoking accidents then ensued and caused us some delay. First the front axle-tree of the waggon broke, and it took us two entire days to repair it. Then a severe fit of sickness made a stoppage by the first water we came to desirable.

It was on the 1st of August that I got the first glimpse of the city of Latter-day Saints, but we had met with some of the Elect before that date, and received great hospitality from them. The strangest of people truly! With legalised prostitution as a tenet of their religion, and blasphemy their inspiration, I found them a kind-hearted, cheerful, and most orderly people. During my stay among them, which was not of long duration, I saw and conversed with all their leaders and chief men, and the impression left on my mind by their manner and conversation was, although I was not deceived by their smug cant and hypocrisy, that on the whole they were kind-hearted and well-meaning men. I could not have believed at that time, what I know now to have been the case, that several of them had been participants in one of the cruellest murders ever perpetrated. On our way to the city we stopped at several Mormon homesteads, and I discovered, somewhat to my surprise, that many of the Saints are not only content with one wife, but are also decided believers in the immorality of polygamy. Many deny that polygamy was one of their original doctrines, but declare that it is an innovation of the much-married Mr. Brigham Young. Personally my travels in the *United States* have stopped short of the bog of bigamy, but I know enough to believe that one wife may be bliss, but two or more are likely to be what the cowboys call "blister."

"How do you escape rows arising from jealousy?" I asked a Saint.

"We never have any," was the reply, with a wink that I did not like.

"That is hard to believe," I retorted. "From what I

have seen of ladies in England, and even in other parts of America, I wonder that most of your Mormon girls are not minus an eye or half their hair."

He laughed; but I could get no other answer from him than that there were never any quarrels among them. However, I was not satisfied, and used my eyes as well as my tongue to get on the soft side of some of the women, with the result that I think I have fathomed the mystery. Where does the Mormon bigamist get his wives? Not a twentieth part of them are American women, and most of those who are of that nationality are the wives of the monogamist part of the community. The majority of the Mormon wives are Germans, Swedes, English, and Dutch. There are very few Irish or other women from Roman Catholic countries. Do these women come to Utah voluntarily? In my opinion they can scarcely be said to do so. No doubt they have a general idea of the sort of country it is and of the principles of the people, but I very much doubt if they come out here with the deliberate purpose of becoming members of a harem. I will endeavour to make clear what appears to me to be the feelings and sentiments as well as the actual position of the female portion of the Mormon community.

Of the whole population of Utah, I should think not more than one-third are born Americans—probably not a fourth are of that nationality. The bulk of the people are from every European country, those I have mentioned above predominating. There are also many Polish and German Jews, who appear to me to be the most anxious to obtain a plurality of wives. Many of these people come here, to put it in plain English, for the unrestrained indulgence of their lust; the bulk, and especially the women, come on the false representations of the Mormon "missionaries." These agents are maintained all over Europe and in England, where they have had considerable success in converting, or recruiting, young women. Were it not for the success of these European agents, my

opinion is that Mormonism would have difficulty in maintaining itself. It is in no great favour with the vast majority of Americans, who are too chivalrous, generally, among all classes, to look with anything but angry disgust at the degradation of women in this out-of-the-way quarter of their country. Briefly, the doctrine preached by the European recruiters is that perfect liberty is allowed by their tenets. All people ought to marry to populate heaven; no one is compelled to marry. If they choose to marry, they may marry as much as they like. As with the old Jews, men can only commit adultery by stealing their neighbours' wives. Ladies are not allowed so much liberty. But an arrangement can be made. If Mr. and Mrs. Jones are of the same mind, the latter can be transferred to Mr. Brown, and all parties take a quiet cup of coffee together. Perhaps half-a-dozen fat oxen also change hands—just as a friendly present, you know. I am not going to attempt to forestall possible criticism on this point; but since I have been contradicted to my face both in America and England (by people who have never been to Utah), I am entitled to assert that such things have happened, to my personal knowledge, among the Mormons. I have never hitherto published a line on the subject, and it is years since I held a conversation concerning it with any gentleman of position; but I remember more than twenty years ago being told that my knowledge of the customs of the Mormons concerning the marrying and transference of women was mistaken, and not founded on a thorough knowledge of their principles. The subject is not now of as much importance as it was then, because Mormonism has received its death-blow—is, indeed, practically a thing of the past; but I can best answer objectors to my assertion by relating an anecdote.

An English Mormon took a fancy to my favourite gun, which I did not feel inclined to part with. In vain he offered a big price, much more than its actual worth.

At length he offered me a wife for it in these precise terms. "You can have which you like, Mary Jane or Susan or Elizabeth; the only two I won't part with are Eliza and Kate." This man had nine concubines. Another fellow, known as Morris of Norwich to distinguish him from another Morris, to my knowledge exchanged women with another rascal named Sillence: and I have heard, from sources to be trusted, of other like incidents. In the face of these cases I cannot see that I am going too far in asserting that with many Mormons women are simply an article of barter. Statements to this effect which I made in conversation¹ at the time were said in England to be at variance with the book of a Mr. Hepworth Dixon who had visited Utah about the year previous to my journey, and who, I was told, described Salt Lake as a most virtuous, peaceful, and well-governed place. I have never read Mr. Dixon's work, but I agree with him if he said that Salt Lake City is well governed and the people industrious and honest. I never heard of a drunkard or a thief there, of a street broil or a murder (a most unusual character for a large American town at that period), and you might spend a month there in an unsuccessful search for the social evil; but the place was rotten to the very core with the worst forms of vice and immorality, and I cannot believe that Mr. Dixon (whose name I frequently heard mentioned there with great respect) has written that it is a virtuous place. No man with his eyes about him could be blind to the fact that Salt Lake was socially a festering sore of the most disgusting type. Was there worse vice in the depths than appeared on the surface? I can only surmise that there was on the following grounds.

No woman ever arrived unattended at Salt Lake. I take the case of young women arriving without male friends or connections. They were invariably attended

¹ I visited England at the conclusion of the journey now being described.

by Mormon agents, amongst whom there were generally women, as a blind, in my opinion. It is also my opinion (I state it as such) that these young women were "sealed" to men before their arrival. Allotted is my interpretation of the term "sealed." There were no houses at Salt Lake where young women could be lodged as such; at all events they were always lodged at the houses of men of whose homes they became permanent members. How the "sealing" or marrying was consummated (to use a divorce court term), whether by persuasion or *force* I cannot say. I have my own opinion about it. Needless to say the class of women who were inveigled here were not the class to cry over spilt milk, and if by chance one came who fretted too long over her lost estate, perhaps there were means of convincing her that she must not try the patience of her *owner* too far. Some of these women, you must know, were "sealed" to husbands who had already gone home to heaven. Their present husbands were only "proxies," who had kindly undertaken to perform the duties of the dear departed until their spouses were ready to join them. A fellow who was scoundrel enough to act and talk in this way would, I think, be scoundrel enough to put away a fretful woman whose tongue might be a source of danger if allowed to wag within hearing of the United States officials, who were already watching with angry eyes this evil-smelling community. I do not know that the Mormons ever resorted to murder in cases of recalcitrant wives. The possibility of their so doing never presented itself to my mind at the time I was amongst them. But since it has often occurred to my mind that it is quite possible that they did so. Murder was a crime punishable among them by secret shooting, but I never heard of a man being charged with murdering his wife. What the Mormons are capable of is shown by the fact that, for political reasons, they murdered a whole caravan of men, women, and children on the open plain, scalping the

corpses that it might appear to be the work of the Indians, who bore the stigma of the awful crime for many years. The United States Government put up a large wooden cross at the spot where the slaughter took place, with this terrible threat burnt upon it, "Vengeance is mine, saith the Lord. I will repay." At the foot of that cross, many years after, when the truth came to light, several of the leaders in that wickedness were shot to death by United States soldiers. Brigham Young himself only escaped this fate because the finger of God forestalled the bullets of the firing party. Am I stretching supposition too far in thinking that the Mormon who could lend a hand in slaughtering defenceless women and children in the open, would not make much ado at secretly putting away the woman who should dare to resist him?

My impression from the time I came in contact with these people was that Mormonism was a political rather than a religious institution; but the leaders of the movement were astute enough to perceive the help the cloak of religion would afford them. They never, I think, evinced that spirit of persecution and intolerance that generally, if not always, distinguishes the founders of new religions. My opinion was (and I never saw any reason to think that it was a mistaken one) that the Mormons did not care two straws what the religion of their neighbours was so that they outwardly professed Mormonism. People who did not agree with their opinions did not seem to be in danger of persecution. They were simply ignored, and treated with such indifference and contempt, that they soon found that Utah was no place for them. I never thought of putting the question to any of the citizens; but I believe there were no representatives of any of the great divisions of Christians in Salt Lake City. Several persons living in the country outside professed to be Evangelical Christians; but there were no Christian churches or chapels established there.

During my stay near the city a strange character appeared on the scene. This was an old man, a religious fanatic, a sort of a travelling missionary. He came sitting astride of a miserable screw, and leading another which he called a pack-horse — two of the sorriest jades I ever set eyes on. The poor old fellow was poverty-stricken almost to the last degree, but full of religious enthusiasm: and he had come hither on the self-appointed task of "converting" the Mormons. He hoped to be allowed to address them in their temple, but that was denied: and I believe that he made attempts to "hold meetings" in the streets or public places in the city. No one would listen to him; but certainly no violence was offered to him. I think he was not even forbidden to speak or preach wheresoever he thought fit, save only that he was not permitted to invade any of their public buildings. No one in the city paid any attention to him. He told me himself that he could not collect an audience; and asked permission to use the foot-board of my waggon as a pulpit. I consented; and he endeavoured to induce people to come out of the city to listen to him, but without success. On Sundays, however, he generally had a congregation of about twenty persons, people living outside the city who were mostly not Mormons, and several of whom were decent Christian people. And to these Jacob Hall—to give him his name—preached some remarkable sermons.

The man was utterly illiterate, yet a fluent speaker; and it was impossible to listen to him without being convinced of his thorough sincerity. Nay more, he carried his listeners with him, so that I for one lost sight of his errors and the vulgarity of his mode of expression in the interest excited by the fervour and pathos of his speech. Sour and eccentric, almost repulsive in appearance, there was that about Jacob Hall which interested and warmed the heart towards him the moment he began to speak.

One perceived instantly that here was a pure and unselfish man with an honest purpose. The Mormons are a wonderfully enterprising and successful people; but no one among them made anything like the impression upon my mind that did the ragged, homeless Jacob.

Jacob carried no arms, "trusting in the Lord for protection," as he put it, as he did for his daily bread; and he had been "wonderfully helped, often at the last moment, when he was on the point of perishing." No doubt he had. He followed the wagon-trains, and sometimes wandered alone when churls told him to "push it." Several times the Indians had surrounded him, and let him go out of mere contemptuous pity; for he had nothing they could take, not even a hair on his poor old bald scalp. Old, worn-out, and unwelcoming of aspect, the moist eye and vigorous "God bless you" of old Jacob Hall recurred to my recollection often long after the more effusive leave-takings of my more attractive Mormon friends had faded out of memory. Such faith, and such simple, fervent gratitude I never observed among any of them.

I never learned much by questioning the Mormons. They always met my inquiries by some such remark as "Join us and you will learn all about it. You can't do better than join us." They always seemed most anxious to recruit any man whom they thought might be useful, or an acquisition to their community, by reason of his possessing a little capital or otherwise. I tried, by sounding some of the women, to ascertain their real sentiments regarding their pitiful position, but on the whole they seemed to care little about it. Everywhere a virtuous woman has her price, which is far above that of rubies; and the women here who were worth their salt somehow seemed to be always the wives of decent men, and to be *wives* in reality as well as in name. Invariably they had been married before coming to this region. Many of the Mormon women I am quite sure were the sweepings of

the streets of the European great cities, and though they never walked the streets of Salt Lake it was because they *could* not, not because they *would* not. Their lords and masters were quite strong enough to keep their city outwardly clean, and did so effectually that not a spot of immoral dust could be seen anywhere. But I saw quite enough of these ladies to know their real character, and so did the soldiers in the adjoining United States camp. The troops had a band which played publicly every day to the delight of the people of Salt Lake, who flocked to the camp to listen to the music. The men, soldier-like, were very affable with the ladies, a circumstance that did not seem to give rise to much jealousy on the part of their husbands.

I hope the reader will forgive me for this long digression. The subject seemed to me to be interesting, but it is not only a digression, but an anticipation also, for I bethink me that I have not yet brought myself and my belongings to Salt Lake.

Salt Lake is certainly a city in a desert. I cannot conceive of a more desolate region than the country around it, yet long before we reached it, I was astonished to see the cheerful homes of the Mormon farmers. There was always a large plot of well-cultivated ground round the houses, sometimes fenced, sometimes enclosed with a well-kept hedge, and always well stocked with fruit-trees, among which peaches, apples, and plums took a prominent place. Not infrequently there were trees also for ornament or shade, and flower gardens that reminded me of my own dear country, the home of beauty and bravery, more than anything I had seen in any part of the States. The seeds, in fact, had been brought from the dear old country, and one old soul I actually kissed (she was very old) because she had two English larks and a linnet in cages, the song of which sounded to me as the music of English worship, and made my soul melt.

Unless a person has passed much of his time in

journeying from place to place in a wild or desert country he can form but a small notion of the effect made on a traveller by suddenly coming to a district which *imitates* his native land. Utah imitates England in some respects more than any district in America which I have visited. Even by the wayside I noticed plants and weeds which were distinctly English, escaped no doubt from the gardens of colonists from the old country; and lest the reader should laugh at the idea of an emigrant importing weeds, which all gardeners are anxious to exterminate, I should say that Nature is carrying on an incessant warfare with the object of propagating *all* her creations—noxious and beneficial to man alike. The seeds of weeds are transported accidentally, as far as man is concerned, from country to country in packets of garden seeds and otherwise,—sometimes, difficult as it may be to some to believe it, even in the clothing or luggage of emigrants. Animals also bring the seeds of plants and insects from one country to another, hid in the hair of their hides, manes, and tails, and not infrequently in their bodies.

Some time before we arrived at Salt Lake City I perceived signs that we were approaching an extensive collection of human beings. Apart from the ground around scattered farms, there was much land under cultivation, with groves of fruit-trees, and other trees which appeared to have been planted to give shelter to cattle, or merely for ornamentation. It is surprising that rough, vulgar men should show so much real taste as I witnessed in this strange place, for I really never met a professed Mormon whom I could consider as an educated man. The rudiments of education are very general, and they look well after the children in this respect, but none of them go far beyond the mere rudiments—the three R's, as it is phrased.

I am not going to give a detailed account of Salt Lake. For a man who has been there twice, perhaps I really know less about it than I ought to, but the

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fact is that I have wandered in the wilderness so long that I cannot rest long near any large collection of houses, and I hold in especial abomination that most useful (I readily admit) of travelling institutions—the railway. The smoke of a locomotive, desecrating the country, was at this time quite sufficient to drive me away from a district, and Salt Lake, the reader probably knows, is a station on the great trunk line which runs through the States from the Atlantic to the Pacific. I have travelled on this line, and felt much while doing so, as I suppose gentlemen do who are compelled against their will to "do time" on the treadmill. Nevertheless it is possible on this line to obtain a grand view of the country.

Lake Utah to the south empties itself into the great Salt Lake through the river Jordan. At the south-east point, where the Jordan comes in contact with the Salt Lake, stands the city. It is surrounded by an amphitheatre of mountains, and it was from the elevated ground that I caught the first glimpse of it. It was so far distant that my view was hazy, but when we had got some miles nearer this is just what I could see of the celebrated "City." A plain of extensive dimensions bounded by mountains of imposing magnitude. Across this plain I could see seven large trunk roads running parallel, and as straight as arrows, as far as the eye could reach. Across the main roads ran many short ones, cutting the intervening spaces into squares or "blocks," as they are always called in America. In these squares stood the houses, not in solid blocks as is usual in American cities, North and South, but each house separate, surrounded by its own garden, which was furnished plentifully with fruit-trees. Hedges and fences could be seen, and generally the "City" had more the appearance of a collection of small fields and market-gardens than a town. Nothing like a street could be seen, or even a contiguity of houses. Few of the latter had an imposing appearance, and the public buildings were remarkable for two things only,

as far as I could judge—size and eccentricity. One vast structure in particular struck my fancy as being extraordinary in point of architecture to the verge of the marvellous, but I perceived that it was not yet finished, being still surrounded by scaffolding. This I afterwards found to be the "Temple" par excellence, and its dimensions and fantastic proportions prove that the Mormon can not only invent a religion, but "a style" of architecture too.

I was surprised to perceive the glint of water within the city bounds, running, apparently, in small canals or artificial channels. A road near the foot of the eminence upon which I was standing was shaded by trees planted at its sides like an English road; and a house to my right was nearly buried in apple, plum, peach, and pear trees, with the green, undeveloped fruit literally breaking down the branches by its weight. Many people could be seen moving about the roads, or at work in the gardens, every one evidently busy in some way or other; but there was a strange absence of those vehicles and beasts of draught which are usually found in the streets of a great town. I did perceive a cart or two and a waggon, but there was not the shadow of a cab or public conveyance. Nor were there many cattle or sheep in the enclosures in the vicinity of the houses. The farm near which I was standing possessed a herd of about seventy goats, and a few pigs at large in the orchard grubbing amongst the fallen fruit. There was also a cow or two, and a large number of fowls; but the sheep appeared to be confined to a small flock of twenty or so. Probably there is not pasturage enough to maintain large herds.

The city lay open to the country. There was no wall round it, and no fort for its defence. I could not perceive a flag flying on any of the buildings; perhaps the Saints ignore flags, or have not yet had time to invent one. They also seem to have no water-carts, for a breeze that was blowing raised great clouds of dust

on the roads. This dust has a distinctly salt, acrid taste, and is very trying to the eyes. Many of the Mormons suffer from ophthalmia, the result of irritation by this dust, I have no doubt.

Though Salt Lake lies at the base of huge, rugged mountains, its site appeared to me to be completely flat. Its bright verdure contrasted strongly and beautifully with the sombre grey of the mountains beyond, which appeared to be fringed with cliffs of an abrupt if not vertical character. There was not the slightest signs of verdure perceptible on the slopes of any of them. Their outline generally was heavy, in contradistinction to sharp, but the sides seemed very rugged and full of jagged rocks. There also appeared to be deep, winding valleys among them, and further back could be seen, in dim, greyish outline, other vast masses of mountains heaped pile upon pile in majestic confusion.

Approaching still nearer the city, I found a long fence stretching across the plain, with frequent openings in it. This, it seems, is a kind of barrier or mark of the city bounds. Just where we passed through there was a small house, built of wood, as I soon found the houses generally were. The proprietor of this house appearing to be a jovial, hospitable fellow, I arranged to stay on his premises during my intended short sojourn amongst them, though I was the next day strongly urged to go within the city, where the use of a house was kindly offered me. I discovered in my walks through the town that almost every fruit-tree and vegetable known in Europe is grown in the gardens here, and thrives well. Cabbages are generally rather leafy, but grow to an immense size, as do carrots, turnips, and potatoes; the latter, however, not striking me as being particularly good. I mention this to show that this desert only requires irrigation and attention to become a fertile region. It is astonishing what a drop of water will do in such a district. The water which runs through Salt Lake in tiny canals is

mountain streams which have been diverted from their courses and brought into the streets of the city, and is of the finest and purest quality. This work alone is telling evidence of the industry and enterprise of the Mormons, and I am bound to say that I have never been among any community in any country in which there were so few idle persons as in this place. One and all work as if for dear life; and no one who has seen Salt Lake City will hesitate to endorse my opinion that in raising such a garden in such a wilderness they have come near to performing a miracle.

My tastes, however, led me to take far greater interest in the Salt Lake itself than in the city named after it. But before I jot down what little I could learn about that most remarkable body of brine, we must head another chapter.

CHAPTER X

THE YOSEMITE VALLEY—(*continued*) THE CALIFORNIA AND COLORADO DISTRICT

THE great Salt Lake appears to me to occupy a shallow valley at the base of a number of abruptly high mountains, several of which shoot up as islands in the middle of its waters. The lake is said to be about eighty miles long, and to vary in width from twenty-eight to forty. I made no measurements myself. The depth is not great; I found it to average about six feet only. At a spot near one of the islands, about eight miles from the shore (at a rough guess), I found as much as twenty-two feet; but I was assured there are other spots where it is as much as forty feet deep. Captain Fremont, of the U.S. Engineers, is said to have found that depth. Perhaps the northern part of the lake, which I did not visit, may be deeper; but, with the exception of a few holes, I could not find greater depths than eight and nine feet. Six feet was the almost uniform depth over a great area of the southern part of the lake, with a hard, rocky bottom. Occasionally I brought to the surface a small quantity of light-coloured mud, which was intensely salt; but I formed the impression that nowhere would the anchor of a small vessel, such as a ketch or schooner, hold. There are no craft on the lake, nor ever likely to be, except for pleasure purposes, I should think; but the lake seems as dangerous to navigate as other large bodies of inland water invariably are. That is, there are sudden storms and rushes of wind from the

mountain gorges that are exceedingly violent, and notwithstanding the shallowness of the water, the waves roll deeply and dash on the shore with terrific violence. Great caution, therefore, should be exercised in going out to the middle of the lake.

The water is brine itself, and there are no fish or other highly organised creatures dwelling in it; but the tales told by some of the City people of birds dropping dead when trying to fly across its waters, and of no creature whatever being able to sustain life on its rocks and shores, are sheer fiddlesticks, and evidently borrowed from similar nonsensical fictions recorded of the Dead Sea. There is not a desert spot of any extent on either land or sea that does not sustain life of some kind, and the great Salt Lake is no exception to the rule.

Should a person suddenly find himself placed on the shores of this lake, his first impression would be one of overpowering awe. I believe no man, not even the least impressionable, could stand here and not be deeply moved with a feeling near akin to that one feels in the solemn presence of death. I know not how otherwise to put it. There is a look of death about the lake, a *feel* of death. The waves move with a solemn roll, and break with a surly thud on the rocky shore. That is the only visible sign of life or motion. The noise of the breaking waves is not at all like that of the surging ocean. There is something so dull and heavy in the sound here that I cannot find words to convey a comprehensible description of it. The brine seems to fall heavier than sea water. It is the sort of sound that I should expect to hear on the dashing down of a vast cauldron of molten lead. There is no crunching, rolling sound, such as is produced by the sea on a shingly beach. It is rather the sound of a dull, sudden, vicious blow. During storms the sound is terrific, the force more so. Had I not witnessed it, I should have found it difficult to believe that so shallow a body of water could produce such tremendous force.

Should anybody now propound the doctrine that shallow bodies of water can produce more force than deep ones, I should be prepared to agree with him after what I have witnessed on the shores of the great Salt Lake. Large blocks of rock weighing many tons (I calculate twelve or fifteen) appeared to have been moved bodily up the beach, a distance of at least twenty yards. The waves did not strike me as being particularly high—I thought some four or five feet—but they came forward with the most appalling force and determination, as it were, that I have ever witnessed in any storm. The water appeared quite black, with scarcely any crest, and there was a sort of rapid *creep* in its advance that gave me the feeling that it would never stop until it had swept itself away in the desert beyond. When it broke it actually shook the solid rock on which I was standing, and threw up so many small fragments that I had to move farther back to be out of danger. A vessel thrown by it on the shore would have been dashed into matchwood, a boat caught in such a storm would be lost beyond all hope. If caught out on the lake it would have been instantly swamped; it might as well strive to reach the moon as attempt to land. A wisp of straw in a whirlpool would have more chance of rescue.

As to the clouds of spray when the waves broke, it literally seemed to run up the face of the rocks. It appeared to me to be dashed at least sixty feet high, and it was only when it fell back into the lake that I heard anything approaching to a *watery* sound. The noise throughout left the impression on my mind of some semi-liquid fluid, as molten metal. The very spray was not so white and glittering as that of the sea; and far out on the surface of the water the appearance was so black that this might have been a lake of bitumen.

Such storms as this, the effect of which I have described, are said to be very unusual. Several persons who had resided in Salt Lake City since its foundation assured

me that they had never seen anything like it before. This seemed to be a year of unusual storms. The reader will remember that I experienced a series of very troublesome ones in my journey hither across the Utah desert. None of these tempests were marked by a heavy down-fall of rain. They were rather tornadoes of dry wind, the force of which was terrific. Much damage was done in Salt Lake, especially among the fruit-trees; the wooden buildings stood the trial much better than I could have imagined such frail-looking erections would. The fury of the storm was undoubtedly much stronger on the lake than ashore. I account for this by the fact that opposing currents seemed to rush down the mountain gorges and unite their force on a line across the centre of the lake which ran directly against the face of the south-east mountains. The wind certainly blew from two directions, north-west and east by north, but towards the end of the storm the easterly current prevailed.

The stream of the Jordan was checked by the power of the wind, and much salt water from the lake blown into it, so that for many hours after the storm had ceased its waters tasted quite salt. Next day I saw several dead fish floating near the mouth of the river, which must have been destroyed by this invasion of salt water. The height of the Jordan was increased also by the force of the wind checking its current, but this was a phenomenon which had been observed before during the continuance of strong northerly winds.

The environs of the great Salt Lake are always gloomy; the extraordinary blackness of the waters during this gale greatly increased the gloom. The ordinary colour of the water is a bright green; quite different from the green of the sea. It is the sort of colour that is produced in water that is much impregnated with vegetable infusoria. I mean those slimy green growths of low organisation that are frequently met with in shallow lakes in marshy land. But the most patient

search failed to find any signs of vegetable growths either in the water, beneath it, or on the partly submerged rocks that environed it. What organisms I did find were red, black, or brown. It is, therefore, out of my power to conjecture what causes the colour of the lake. It would be mere guess-work, unsupported by a tittle of evidence, were I to attempt to do so. Viewed from its margin, or gazing into its waters from a boat, it appears, as I have said, of a bright green—a chrome green, not a sea-green. The waters are opaque; although it is so shallow I nowhere succeeded in viewing the bottom of the lake, not even where it was so shallow that I could put my arm down from the boat and feel it. The touch was slimy, but nothing could be scraped up but a thin coating of mud-like substance, which seemed to be partially decomposed salt. I remember greatly regretting at the time my want of scientific education. I would have given much to have had a skilled gentleman with me who could have ascertained the nature of the water. Beyond saying that it is intensely salt and turbid, I can give but little information about it, from sheer inability to judge of its nature.

The growths of which I have spoken were found on some of the rocks in the bed of the lake, which were partly submerged, and were of such a minute, I had nearly said trifling nature, but nothing is really trifling, that perhaps not one traveller in ten thousand would think them worth noticing. They appeared to be of the nature of "rust" or fungoid growths, and there was nothing extraordinary in their appearance. I have seen very similar minute organisms on rocks on the sea-shore, only these differed somewhat in colour. For instance, on some of the rocks they were bright red, almost scarlet, and arranged in clusters, giving the rock, viewed from a short distance, the appearance of being covered with red blotches. On one of the "islands," or enormous rocks, in the middle of the lake near the

southern end, and which is said to tower much more than three thousand feet above the surface of the water, I found, clinging to the rocks (grown to them in fact) a simple sac, which I believed to be a living organism. It was dull grey in colour, resembled the pod of a sea-weed in shape, and was half an inch in length in the largest specimens. Some were filled to rotundity with a watery fluid, others were in a state of partial collapse, and some were completely collapsed, resembling small leathery disks on the rocks. These and a minute sponge were very numerous on rocks situated in the water at some distance from the shore. On the shore rocks I found no such organisms. On all parts of the lake I examined the rocks were much encrusted with crystallised salt ; the growths I have mentioned avoided such rocks, and were found only about the level of the water or below it in sheltered corners. A favourite position I noticed to be where the rocks shelved away from the surface of the water, so as to form a small cave, or semi-dark recess, above the surface. They also occupied small cracks in the rocks under water. I could not find any substance of the nature of sea-weed, and although my search was confined to the southern half of the lake I think we may be assured that no sort of water-weed grows in the lake itself, or any kind of plant on its shores. The water is inhabited by crustaceans, about a dozen species of which I discovered, half of them microscopical. They all resemble the "brine-flea," as the Worcestershire salters call it, and I could discover nothing remarkable in their habits, unless it is that the water from the deepest parts of the lake seems to contain the greatest number of them. On some parts of the shore I found rocks and masses of stone which had been bored by some kind of marine worm—the worm itself I could not find. In the mud dredged up from the bottom I found a few worm-like creatures with segmented bodies about an inch long, and furnished with a great many short legs, like a

centipeda. They were very fragile, broke in two if not handled carefully, and soon died.

All the rocks in the lake are very abrupt and of great height, not less, I should think, than three thousand feet, and rather more for the highest. I landed on several of them, and attempted to ascend the highest. I climbed up some two or three hundred feet only, and was obliged to descend. I doubt much if a more active man than myself could have got much higher, at least without the aid of ropes and ladders. The rocks were rugged and steep, and covered with salt crystals to a height of sixty feet and more, which seems to confirm my opinion that the spray broke to that height during the storm. There was not the slightest trace of vegetation on any of them, nor any animal life, but the quantity of droppings on the rocks showed that birds must frequently pitch there in considerable numbers, and I found the trunk of a tree, more than a foot in diameter, wedged among the rocks a few feet above the water. This had probably been washed into the lake by one of the rivers, and may have been here hundreds of years, for it was almost petrified, by the action, as I suppose, of the saline particles.

One of the most remarkable facts with regard to this lake is that, although a great body of fresh water is annually poured into it and it has no known outlet, there is good evidence that the level of the brine is gradually lowering, and probably, in course of time, the lake will degenerate into a dry salt-pan. Lake Utah, situated to the south, and appearing to me to be from a fourth to a third of the size of the Salt Lake, pours a very great body of fresh water into it through the Jordan River; and the river Wear, entering the north-east corner, also must replenish it with a by no means inconsiderable body of fresh water. There are also a few minor, and probably intermittent, streams which add to the volume of the great lake. Yet, as I said, the level is steadily diminishing. I have not surveyed the

lake with sufficient thoroughness to hazard an opinion as to whether it has an underground outlet, but I am inclined to think not. My reasons for venturing to form this opinion are that the waters of the lake retain all the intensity of their saltiness, and the evaporation from its surface is very great. With regard to the first point, I think if there were an underground outlet the water would gradually become less saline, because the constant incoming of a great body of fresh water commingling with the brine, and much of it running off before it had time to become thoroughly impregnated with the saline particles, which must be derived from the rock of the lake's bed, could have no other effect than to gradually lower the standard of its salineness. The other point, viz. the great amount of evaporation from the lake's surface, is a fact beyond dispute. It is probably so great as to equal, if not exceed, the amount of fresh water poured into it.

I tried a few simple experiments that may have some value in aiding us to form a judgment of the effect of evaporation on this lake. I put some of the Salt Lake water in a shallow pan, and some of the Jordan water in another pan, and exposed them to the air in a place where the sun could not affect them. The weather was dry and windy, and between six o'clock A.M. and six P.M. half an inch of the lake water evaporated, but so little of the Jordan water had vaporised that I could not measure the quantity with my rough means. Again I put a pan containing three inches of lake water in the blazing sun, and another pan with the like quantity of the Jordan water. In twelve hours half the lake water had vaporised, while about half an inch of the river water had disappeared. These figures seem to show conclusively that under like circumstances the lake saline evaporates much faster than fresh water. But we must not arrive at hasty conclusions. I should like to see the subject taken up by abler hands than mine.

The shores and neighbourhood of the lake are re-

markable for weird noises, which seem to be occasioned by the wind soughing through the gullies and ravines. Many of the sounds are very strange, resembling cries of distress and moans, and have given rise to some superstition among the most ignorant of the inhabitants; and I believe the Indian aborigines of the district were driven far from this spot by them, the chief reason probably that the Mormons have been so little troubled by these marauders. I may say that I was myself surprised by the peculiarity and intensity of some of these noises, but I believe that my theory that they are all occasioned by the wind is the correct one. There are many tortuous and very rugged ravines sloping down from the mountains to the very verge of the lake, and I have proved that sounds are both perverted and intensified in a strange way in these ravines, and there are also many echoes and re-echoes which have a strange and weird effect, often greatly exaggerated by the superstitious fears of the listener. If the reader will take a piece of thorny stick full of jagged points, and holding it a few inches from his lips blow violently on it, he will perceive that it produces a much sharper whistling sound than a piece of smooth sealing-wax subjected to the same process. So the wind, blowing strongly over jagged rocks, makes a peculiar hissing or screaming sound not heard in ordinary situations; and when these rocks happen to be situated in a hollow way, with precipitous mountains several thousand feet high on either side, the sound undergoes many distortions that produce remarkable effects. That is my opinion; at all events the "ghost sounds" and "spirit sounds," as I have heard them called by some of the Saints, are one of the remarkable features of the great Salt Lake.

During my stay here I made several excursions among the mountains around the lake; indeed my time was pretty well occupied by these and my examination of the lake, to the almost exclusion of the city itself, in

which I felt but a scanty interest. I think I have described these mountains as heavy-looking; that is their character. There is nothing very remarkable in their outline, but there are many deep gorges furrowing their sides, and the general aspect of the range is rocky and rough, like every other part of the Rocky Mountains that I have had the good fortune to see; and these, undoubtedly, form a spur of the Rockies. On account of their heavy, lumpy character, these mountains do not look so high as they really are. I do not know the exact height of any of the more prominent heights, and local opinion on the subject I take to be somewhat exaggerated, but judging by the eye and comparison with hills of known heights in other parts, I should think them to range from three to five thousand feet. But advancing farther north they certainly increased in height. I probably penetrated as much as fifty miles beyond Salt Lake City in a north, and north-by-east, direction, and the whole of that distance range rose above range without a break as far as one could see. At the farthest point northward that I reached several elevations showed themselves at great distances which I cannot but think exceeded ten thousand feet in height. But I confine myself here to the mountains in the immediate neighbourhood of Salt Lake.

I have referred to the houses in the city being mostly built of timber. There is no timber anywhere near, and I found on inquiry that it was imported from great distances. There is considerable trade between Salt Lake and San Francisco,¹ and some of the timber had been brought from the Pacific board, a distance of nearly *seven hundred* miles over a terrible country. Could anything speak more highly of the determined courage and enterprise of these Saints? Much of the timber had, however, been brought, roughly cut, westward from the Rocky Mountains. Provisions and farm produce, includ-

¹ Remember I am writing of twenty-five years since. I know nothing of the relations of the two places at the present day.

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ing large quantities of fruit, are taken overland to Frisco, and the waggons bring back a load of cut planks or beams. The rough logs come mostly from the Rockies.

These remarks were provoked by the fact that I was going to notice how scarce trees were near Salt Lake. Close to the lake the mountains are absolutely bare of vegetation. Perhaps the salt in the air kills it, but this seems improbable, since verdure is generally met with close to the verge of the sea. However, there is not a blade of grass or the humblest weed to be found near the lake. When we get into the mountains there is a scanty grass, and a few scattered herbs; but the first tree I found was situated at a height of at least two thousand feet, and three miles away from the lake. It was a miserable, wind-blasted specimen of the pine tribe. When I got well into the heart of the mountains, however, say eight or ten miles from the lake, trees were more plentiful, though sparsely scattered about, and often of finer growth; and there was a fair sprinkling of bushes, among which I recognised a species of azalea bearing a white flower. Alpine flowers of species I had never seen before were here and there noticed, and there was a sufficient herbage, in spite of its scanty look, to feed a lively flock of big hares, to say nothing of nobler game. Among the latter, in addition to two species of deer and the elk (localism for the wapiti), may be reckoned the big-horn sheep, although I only saw it once, but that is not surprising with an animal so shy and cunning. Where you find one big-horn you may be sure there are many more; but they probably scent you or see you, or both, long before you see them, and make off. I saw one herd of five about twenty-five miles from Salt Lake, but never got nearer than half a mile, though I tried hard for eight hours; for to shoot a big-horn is something to boast of, and stamps you a hunter indeed. That I succeeded in keeping these five in sight for so long is no mean feat, as any man who has been after big-horn will readily

admit. Of course I often temporarily lost sight of them during the time, but it was fully eight hours before they finally got away, and I have often been far less "put out" by a far more provoking disappointment.

Among the Utah mountains, in addition to the animals already referred to and some of those mentioned as having been seen in the desert, I found quails, a kind of mountain partridge, several small birds, and the Californian condor, and two or three varieties of hawks. All these were afterwards met with more abundantly in California, Colorado, or Nevada, where I became better acquainted with their habits, &c., and I defer a description of them for a time, when those seen in this neighbourhood will be duly referred to.

If the Utah desert is scantily supplied with good water, the same cannot be said of the mountain region. I found many small streams and rills, and it is some of these that are conducted through the city streets to supply its inhabitants. The water seemed to me to be of the finest quality, and those streams which supply the town are perennial. Some of the smaller rills, however, dry up towards the end of the summer. Some of them have their origin in springs, and others seemed to be fed by the melting snow. Some of the highest mountains which I saw in the distance were still capped with snow, and I also found small quantities of snow in sheltered nooks in the hills at no great distance from Salt Lake.

The last day I spent here was a Sunday, and I paid a visit to the temple. It is situated close to the "Prophet's Block," as the residence of the leader of this extraordinary community of religious mountebanks is called. Had I not known the purpose to which the building was devoted, I should have taken it to be a gaol, or a barracks, or a lunatic asylum. Both temple and block are surrounded by a substantial wall supported by buttresses, and there are many outhouses or auxiliary buildings. Worship was conducted with decency, and

with assumed, and perhaps real, reverence. There were several speakers, all of them fluent of tongue, but illiterate men, and there was also a great deal of extempore prayer, any member of the congregation being apparently at liberty to publicly address the Almighty. The speakers paced the platform while preaching, made frequent references to Christ and the Bible, which I had not expected, and alluded but scantily to their own peculiar tenets. No reference whatever was made to polygamy or to the "Book of Mormon," and in a word I might have been in some ordinary dissenters' place of worship, except, indeed, that several of those who spoke and prayed became unusually excited, one man being seized with a sort of St. Vitus's dance while howling out his supplications, the precise object of which I did not comprehend, as probably he did not himself. I only gathered that he was anxious to become the possessor of a mysterious something which he termed "the gift." The music was good, the people singing in excellent tune, and the hymns used were a miscellaneous collection similar to that in use in most dissenting places of worship. I turned over the leaves of the book lent to me, but I could not discover anything peculiar in the hymns or find the name of any Mormon leader attached to them. Among them were many bearing Wesley's name, Toplady's "Rock of Ages," &c., &c., and the tunes were such as are in common use in American churches and chapels, which to a great extent are the same as used in England. The Book of Mormon was not Joe Smith's production, although he appears to have been a man of some education. It either was, or was founded upon, a MS. found among the papers of a Pittsburg publisher. This MS., which was entitled "The Manuscript Found," was the production of a blasphemous student, a disciple of Tom Paine, who appears to have intended it as a caricature of Scripture. The alphabet or key by means of which Smith pretended to have translated it may have been his own production,

but it was a performance so crude that it could have deceived none but the very ignorant. Where he got hold of the word "Mormon" it is difficult to say. It is really a Greek word signifying a ghost, but it is pretty evident that Mr. Smith did not know that when he translated it as meaning "more good."

Daybreak on the following day found me once more wending my way across the Utah desert, taking the direct track for Carson and Frisco, as San Francisco is invariably called by Americans. The journey across this desert tableland was one of the most trying I ever performed, and the most monotonous. I had been advised to change my mules for bullocks by many experienced Mormons, as there was an opinion that the latter best bear a long deprivation of water; but I stuck to my mules, nearly losing them several times in this terrible country, where water is as scarce as in the Sahara. I had been advised beforehand as to the best route to take, the spots where I was likely to find water, &c., but I must needs go adventuring and striking out a path for myself. I was travelling for the express purpose of seeing the country, and see it I would at all costs. Besides, as the best road was bad, it occurred to my vanity that in any case I could not do better than follow the leadership of my own nose, and by so doing might very possibly find a better road than that followed by the Mormon waggoners, which was on their own showing whitened with the bones of men and beasts, and infested by I can't remember how many tribes of "red cusses," ravening for the white man's blood.

This last was the most serious danger of all, and I was considered a foolhardy and obstinate man for travelling alone with so small a party; but I have a way and a will of my own, and I reflected that as it was impossible for me to hire a sufficient escort to ensure my safety, and dawdling along with a Mormon waggon train would defeat the chief object of my journey, my only chance was to avoid or outwit the Indian murderers. I had self-

reliance, or conceit, enough to think I could do that. My driver was a man who knew no fear, and black cookee had to do as I thought fit, for niggers were not in demand at Salt Lake, so he could not remain behind; and if the worst came I had the means and the determination to sell my life pretty dearly. So I refused advice and started alone. As it happened we did not see an Indian during the whole journey, but difficulties came heavily enough in other shapes, and dangers almost as deadly as the red man's arrow.

I had replenished my waggon with all necessaries at Salt Lake, and carried as much water in barrels as the mules could draw, having got rid of several weighty articles, including most of my furs, to enable me to carry an increased quantity. Furs, I may remark, fetched remarkably good prices at Salt Lake, particularly buffalo robes and bear skins. Both these were getting scarce at this time; the buffalo (bison) was on its last legs, and the grizzly had already been poisoned to an alarming extent by the Utah herdsmen. Moreover, I did not meet a single hunter among the Mormons. The Saints do not seem to take kindly to the hardship and exposure of a trapper's life. They are an industrious people I know; but it is strange that in all countries alike religious adventurers and bigots seem to fight shy of all callings that entail much danger or hardship. At all events the Mormon is a home-bird, and is never found far from his farm and his family, except when conveying his produce to distant markets.

The country did not improve as we journeyed from Salt Lake, but quite the contrary. The farther we went the worse it appeared, and a week out we were in the midst of absolutely the worst country I had ever seen. It was desert without qualification; not sandy desert, but hard, impervious rock, or soil that looked like baked clay, and appeared never to have seen a drop of rain or water in any form. Salt licks were numerous, all showing evidence of being saline lakes at certain times or seasons;

or at least they had been wet at some time, for we could easily trace the marks where the water had settled at different levels. Not a green thing existed in the neighbourhood of these licks. What grass grew on the plains was dead brown, like scorched hay; and the stunted bushes in the valleys also looked as if fire had passed over them.

Yet the country was not so flat as the desert we had previously passed through. There were hills, and undulations, and rocks, with now and then an absolutely flat tract. Flat regions without a break or slope of some sort are far rarer on the earth's surface than the majority of people seem to think. There is much error on this point. Nearly every person seems to think that a traveller can see immense distances around him on a level plain. The reverse of this is the case. Great distances can only be viewed from heights. It is often the case that you can see a long distance looking upward from a valley. On an open plain which is perfectly flat, about four miles is the extreme distance that the eye can carry. A man riding from you will disappear entirely from view at that distance; you cannot even follow him with a spy-glass. The reason is that the ground is subject to the natural curve of the earth, just as the sea; and objects *sink below the horizon* at the same distance. From this cause mountains and other objects on the verge of a plain often seem to a traveller to be much nearer than they really are. You appear to have but a few more miles of plain to ride over, yet you go on and on, and hours pass and you do not appear to have materially diminished the distance between you and the point you wish to reach. A man riding across a plain may trot out of sight and presently, on reaching a rising ground, again appear, though no depression of the ground exists to hide him.

Something of this sort occurred to us on the 23rd of September. Two black dots being seen to move on a ridge to the north-west of us, were examined through a glass,

when they were discovered to be horsemen; but the glass was not sufficiently good to show them in detail, and we immediately jumped to the conclusion that they were Indians. They disappeared, and a few minutes after a party of at least twenty crowned the ridge. There was great excitement amongst us, for the terrible stories of murder and mercilessness which we had heard at Salt Lake were still very fresh in our minds, and it seemed improbable that any men except red skins would be roaming about this desolate region, though it did occur to us that it was quite contrary to the habits of Indians to expose themselves so freely on elevated ground.

However, all doubts and fears were soon dispelled. The two horsemen had seen us, and the waggon had revealed our nationality (the Indians always immediately burn waggons which they capture), and presently they appeared in sight galloping over the plain to meet us, followed half a mile behind by the main body. They were miners bound to Carson, who had been driven from the road after a fierce encounter with a large body of mounted Indians, more than a hundred in number, they declared. They had lost several of their number, but they were still twenty-five strong, eight or nine of whom were wounded, several very badly. They were in great straits for water, and we were compelled to give them a great portion of our precious store. They claimed to have killed a dozen of the Indians, but had been compelled to abandon the bodies of their comrades.

This was very disquieting news for us, as the Indians would be sure to follow their tracks. The miners, however, were of opinion that they had shaken off their enemies, as they had seen nothing of them for the three days which had elapsed since the fight. They proposed to me to abandon the waggon, as it was sure to be discovered by the Indians, and ride with them in all haste to Carson, carrying what of my goods it was possible to save on the horses and mules. I declined this proposal,

and ultimately they rode away, leaving on my hands two of their most desperately wounded men, who, it was evident, were incapable of riding any further. One of these men soon afterwards became insensible and died the following day. We buried him by the wayside. This incident will give the reader the best possible idea of the great danger of travelling in this wild country a quarter of a century ago. At that time I suppose there were not more than thirteen or fourteen thousand men, collected at a few mining centres, in a country as large, or larger, than the whole of England; while bands of Indian robbers roamed unchecked in all districts. The traveller had to put his life in his hand and take his chance. If he could not defend himself he had to fall.

The sense of imminent danger destroyed all the pleasure of my journey, and our energies were now concentrated on reaching Carson with the least possible delay. And now I was thankful that I had not listened to the advice offered at Salt Lake, and substituted bullocks for my mules. Notwithstanding the proverbial obstinacy of mules, they are really most useful animals, and tractable enough when properly handled. The secret of managing both man and brute is *kindness* and slowness to wrath. There is not a surer or quicker way of causing both animals and men to despise and resist you than giving way to haste of temper. It is surprising what difficulties, and even dangers, a little patience will bring a man through. But with regard to mules: they have stronger constitutions than horses and are far more enduring, and will keep in health where a horse would die. I mean that you can subsist them, while working them hard, in a country where you could not find food for horses. You can pack from 350 to 400 pounds weight on a mule, and he will carry that day after day for months without suffering from a sore back, if it is properly loaded. He will draw at least double that weight in any country where a vehicle can be used, while on tolerably good

ground he will move three or four times as fast as a bullock. The only mules I ever had the slightest trouble with were those whose tempers had been spoilt before they came into my possession. Even with such I soon gained such influence that I could manage them ; and one mule controls another in a remarkable way, so that the really vicious ones are soon reduced to obedience. I, or my driver, who was a humane man, had but to go ahead and whistle, or shout some encouraging remark, such as "Now then, come along, old fellow," and the whole team would put forth their full strength. We never used a whip, which is a useless instrument unless it is used brutally. The crime that sank the Saints in Utah deepest in my estimation was their cruelty to their cattle. A Mormon thought nothing of lashing his oxen until the blood dripped from them, and laughed at remonstrance. The poor brutes would often bellow with fright at the mere crack of the cowhide whip, which was capable of cutting out little strips of their skin.

Another advantage of mules is that you never lose them. If they are accidentally stampeded, they always return to the waggon and leader they are accustomed to ; and where one goes they all go. They never forsake company under any circumstances. Their power of scent is extraordinary. They will sniff water in the wilderness when it is fully ten or fifteen miles distant, and travellers in distress for this necessary should always let them have their heads. If one or more mules are forcibly detained from a team, they will seize the first opportunity to escape and rejoin their companions ; and unless the team has passed through a large town, or in some other way failed to leave a scent, they will follow and find them with greater certainty than would a bloodhound, and over a longer distance. Mules follow a track either by smell or sight. That is the conclusion my experiences have led me to form. A mule that I once sold because it was a great fighter and viciously bit its com-

panions, escaped two days afterwards, and joined me thirty-three miles from where I had left it. It covered that distance, evidently following my track closely, in three hours and a half, mostly over prairie land; but it was seen to pass through two small hamlets where I had made temporary halts, and was also seen at three or four other points. This animal must have followed me by scent, and been capable of tracing that scent more than fifty hours after it had been left.¹

But when the case is reversed, and two mules I had purchased took the first opportunity to trot back more than twenty miles over a country the greater part of which they had never before traversed, passing through several villages and a township, it is pretty certain that they must have found their way by sight or remembrance of the road, unless we are prepared to believe that their powers of scent were so great that they could find their own particular trace among those of a dozen others with whom they had been in company (who were strangers to them, however), and which must have been crossed and recrossed by other animals and by men.

When we stopped for the night I usually released my mules and permitted them to wander over the plains unhobbled, to find their own forage. I could always assemble them with a shrill whistle; indeed, they often assembled at mere sight of me leaving the waggon. The nearest would whinny and run up, quickly followed by the rest. When, however, it was thought that Indians were near, it was necessary to keep them tethered lest they should be destroyed.

¹ This mule would worry any other mule, or horse, or dog. It killed several of the latter by *biting*, breaking their backs or necks. I tried muzzling, but this irritated it so much that I decided, very reluctantly (for the creature was much attached to me, and quite inoffensive towards men), to have it destroyed. The man to whom I sent it offered to purchase it; and he told me that it proved a very useful animal, but had to be kept apart from all other mules and horses. It was an unusually fine animal.

CHAPTER XI

THE YOSEMITE VALLEY AND COLORADO DISTRICTS—*continued*

To return to the waggon and our fears. Several days passed and we saw no signs of Indians, and we began to feel reassured, especially as I began also to have some doubts if we had heard all the facts of this strange episode from our late visitors. The man we had buried was said to have been a Norwegian or Swede, the man who remained with us was the son of an Irish woman by a German father, and gave his name as James Hartmann. Nearly all his companions were Germans, Dutchmen, or Swedes, and I do not doubt but that they were genuine miners. But I am afraid they were not nice men, and I am not satisfied that they had really had a fight with Indians. It is quite possible that the encounter had been with another band of miners, with jealousy as the foundation of the quarrel. One reason for this suspicion was that their opponents seem to have been so remarkably well provided with firearms. The Indians at this time had few rifles, and still largely used the bow, and with great skill too. The man who died with us had no fewer than four pistol balls in his body. The six-shooter was rarely seen in the hands of an Indian; more rarely still did he come near enough to use such a weapon until the utter destruction of his enemies or victims was assured.

Perhaps these doubts and suspicions would not have arisen had the conduct of Mr. James Hartmann been a

little better than it was. A more troublesome wretch, or one possessed of less gratitude, I never had to deal with. To swear at the rate of two or three oaths per sentence is, unfortunately, such a common offence in the Far West that one gets used to it, and it does not cause that shock to the hearer that it would in a refined country. But this man's language was revolting—horrible; and he so frightened my black servant by pointing his Colt at his head and threatening to shoot him, that he refused to go near him until I had taken the weapon away from the fellow—an act that caused a frightful outburst of fury on his part, accompanied by such dreadful threats that Bob, my mate,¹ a thoroughly kind-hearted and forbearing man, advised my leaving the fellow by the wayside. I did not, of course, entertain such a thought for a moment; but this new trouble increased my anxiety to reach Carson as speedily as possible.

The bone of Hartmann's leg was smashed by a rifle-bullet, and the fear that he would lose the limb made him wild. He cursed and blasphemed about it continually. He was left on my hands with nothing but his six-shooter and a tin pannikin; but he had in his pockets a quantity of the vilest strong tobacco I have ever smelt, and his pipe was never out of his mouth during his waking moments. The horrid smell of his foul pipe and stale tobacco made the interior of the waggon unendurable, and I was compelled to abandon my moving home entirely to him. He lay on my blankets and rugs on the floor and spat all over the place, seemingly taking a delight in sullying all my belongings. His misfortunes had completely destroyed his self-control—if he ever possessed any; and he was dreadfully out of temper with everything and every one, including, of course, himself.

¹ That is, my paid attendant, a thoroughly worthy fellow; but to have referred to him as a servant, or even hinted at any obligation due from him to me other than what sprung from his goodwill, would have been a mortal offence. A *white* could not be a *servant* in the States; a *black* might.

He was never tired of railing at me for a —— fool for wandering about the country catching tomtits and bugs (alluding to my collection of birds and insects), commended me to the realms of evil for begging him not to smoke in my waggon, and threw at my black's head the nourishment which had been prepared for him with great trouble. All this from a man whose life I was saving!

I did what I could for him, and bandaged his leg in a pair of roughly-formed splints. But that did not please him because, he said, it gave him pain, and he tore off the bandages. He had scarcely done so before he bawled for me to put them on again; he had been examining his leg and its state frightened him for the time, and we had an hour's quiet. In the middle of the afternoon he began to shout, laugh like a maniac, and yell out filthy songs. Going to see what was the matter I found that he had prised open the door of my whisky cupboard, and had made himself roaring drunk, having drank at least half a bottle-full. He soon became insensible, and for hours appeared to be about to die. The trouble we had with the fellow at this time (for his excess made him dreadfully ill) made it a period of horror indeed.

The fourth day after this incident a worse occurred. The side of the waggon was suddenly seen to be on fire, and we had scarcely time to drag the sleeping Hartmann out before our store of gunpowder, about five pounds weight, exploded and blew the upper part of the waggon to pieces. The violence of the explosion frightened the mules out of their wits, and, lightened of three-fourths of their burden, they dashed away at full speed. For a short time despair overwhelmed me, for our plight now seemed desperate beyond repair. "You wretch," I exclaimed, shaking my fist at the recumbent Hartmann, "I feel as if I could kill you." For, of course, I attributed the accident to the fellow's pipe, which he must have let drop lighted when he went to sleep. He was so much frightened himself that he could make no reply.

Bob and the black went in search of the mules, while I employed myself collecting such of my goods as were still of some use. Many necessaries were completely destroyed, as was my fine collection of birds and insects, which, judging from past experiences, was worth several thousand dollars, for there was a good demand among American naturalists and others for these desirable objects. Apart from this loss the damage by fire and breakage was very great; for nearly everything in the waggon was ruined, including my valuable compass, a microscope, several other instruments, and one of my best guns. The food supply was scattered in all directions, but most of it was still usable; but everything of a fragile description was destroyed. That we escaped injury to life or limb was providential, for we were all close to the waggon at the time of the explosion, a circumstance to which, perhaps, we owe our escape. For objects were blown over us that might have struck us had we been farther off in their line of flight.

This accident occurred about four o'clock in the afternoon. As the mules with the remains of the waggon had not been brought back at dusk, I was compelled to light a fire to serve as a guide of our whereabouts to Bob and the black, ignoring the fear of its possibly attracting the Indians also. As hour after hour passed and they did not appear, my anxiety became most painful to bear; but I could do nothing except keep up a good fire—no easy task, for there was little to serve as fuel save the dwarfed bushes, which burnt like wildfire—and I had to search for a considerable distance around to procure sufficient to keep the fire going.

After some hours of silence, induced, I hope, by a sense of shame, Hartmann broke out with, "I say, mate, you couldn't find me a drink, could you?" I was suffering much from thirst myself, but there was nothing drinkable among the débris of the waggon, nor could I find a drop of water in the neighbourhood, so we both

had to endure our misery as best we could ; and I can't say I was sorry to see that the author of all this trouble was too miserable to swear, but confined the expression of his suffering to very pitiful groans and cries of " Ho ! " as he turned painfully from side to side.

It was one of the most wretched nights I have ever passed, and I almost felt like a man going mad from utter helplessness and uncertainty. Often I shouted as loudly as I could in the hopes of hearing the earnestly longed for reply of my companions, but as often I was disappointed. Not a sound broke the stillness of that night in the wilderness—not even the cry of a bird or beast of prey. It was a beautiful clear night, and cold enough to make one glad to keep near the fire, and a multitude of stars twinkled brilliantly overhead, but of signs of life or sound of any kind there were absolutely none, which is most unusual, for even in the most desert country there are usually some wild creatures on the prowl in search of their prey, or at least insects chirp and buzz.

At dawn of day I went to an elevation of a few feet in height and waited for sunrise. At any other time I should have enjoyed the splendid sight of the rising sun coming forth as it were from a cauldron of purple and glowing red fire, but now my anxiety made me preoccupied and oblivious of all the splendours of Nature around me. I scanned the horizon on all sides ; at first with anxious haste, then slowly and carefully. Not a sign of my missing companions ! and my heart sank with dejection. What if they had mistaken the direction in which they had left me ? What if any fatal accident had overtaken them ?

I went back to the spot where Hartmann was lying. " Good God ! do you mean to let me die ? " he exclaimed. " I recommend you to turn more reverent thoughts towards God ; for unless help comes we shall both die," I replied. " What do you mean ? " he shouted. " Can't you go and find water ? Can't you go for help ? Can't you carry me on your back ? " In spite of our sufferings

and serious position I laughed. Although I am well developed and strong of arm, I suffered from a weakness of the legs which compelled me to habitually wear iron supports; yet here was a bulky giant, six feet high, suggesting that I should carry him! The selfish ludicrousness of the request made me forget my own suffering for a moment, and my merriment brought on a return of my patient's ill-temper. The man was incorrigible and shameless. He began to fume and swear.

It was midday before I saw, to my great joy, my two companions returning with the mules and the remnant of the waggon. None of the mules were hurt, and the wheels, axletrees, and bottom of the waggon were intact. Part of the sides also remained, and fortunately two of our water-barrels, which were slung under and behind the waggon, were partially filled. The others were lost, having probably rolled off when the mules were scampering away, and many other heavy things were lost in the same way, a few of which were afterwards discovered lying at the spots where they had been jolted off in the mad flight of the affrighted animals.

The mules had been recovered at sundown the previous evening after a long chase. Close to the spot where they were stopped there was a pool of fresh water fed by an underground spring, and Bob had thought this a fit spot to remain at during the night. He accordingly left Cookee in charge of the mules, and endeavoured to find his way back to me mounted on one of them. He never saw my fire, though he must have passed within four or five miles of it, and after riding about for several hours, found his way back to the mules in the dark with difficulty. There he passed almost as anxious a night as I had done, starting at daybreak to find me. This he did as I have mentioned, having travelled at least a dozen miles from the spot where he had rested. To that spot I determined to go as speedily as possible, as it seemed a desirable resting-place, and we could there

replenish our water-barrels. Collecting, therefore, such things as were worth saving, we placed them on the waggon, now reduced to a trolley, and there deposited the author of all this evil also, though I had some difficulty in inducing my companions to help lift the rascal up, especially as his demeanour was still utterly ungracious.

The mules were thoroughly tired out, having evidently had a fierce gallop of many miles, and we could not reach the spring that night. There was sufficient water in the barrels to give each animal a short drink, and we lay on the ground around a big fire, for misery and suffering had made us reckless of Indians and everything else except the supplying of our immediate wants, and the nights were very sharp. We felt the cold, probably more owing to the great drop of the temperature, which was very hot at noon, than from the actual degree of cold, for I could not ascertain that there was any degree, even the slightest, of frost. Most of our blankets were burnt or charred into holes, so a fire was indispensable. We had to lift the wounded man down and place him beside it, the cold affecting his leg so that he suffered intensely.

It was not until the middle of the next day that we reached the spring. It formed a pool about an acre in extent, very shallow and brackish, yet drinkable, and it was probably the only water in the neighbourhood, for several animals came down to drink at nightfall, including wolves, foxes, a puma, and several deer, and a whole host of birds. I shot one of the deer, which afforded us a much-needed supply of meat, and the wolves pulled down another, while the puma, failing to secure a deer at which it sprang, pounced upon one of the wolves, and trotted off with the carcass with an activity that showed that these animals, like all other cats, possess great strength, for the wolf probably weighed nearly a hundred pounds. We, in consequence of these acts of slaughter, called the water "Slaughter Pool." Whether the name

has stuck to the place I cannot say, though equally slight christenings have been confirmed in many out-lying spots in the American wilds—"Bill Williams' Fork" and a hundred other forks, for instance. But this pool probably often dries up, and disappears in dry summers.

The whole of the next day we remained here to rest ourselves and the mules. James Hartmann was now very ill, his leg in an alarming state, and discharging a great quantity of pus. It was evident that he was a subject for immediate medical aid, but it was impossible to hurry on faster than we were doing, and of the distance to Carson I had now but a very hazy notion, and only a rough one of its direction. The loss of the compass was a serious matter.

The wolves I have spoken of remained howling about us, not only all night, but all day too, attracted no doubt by the offal of the deer and the smell of blood. They were very bold and could not be driven far off, not even when lighted fire-brands were thrown at them. I could not afford to fire at them, for only about a dozen charges of powder remained in my flask, and this was all we had remaining for the rest of our journey to Carson, which might take us a week longer or more.

These wolves were the common large species, not the coyote; and this was our first meeting with them in this district. There were about fifty at first, but others joined them during the day, coming apparently from a distance, so that at night their numbers had increased to nearly a hundred. The mules were terrified at their presence, and we had to keep a constant watch to prevent their being dragged down before our eyes. The gradual assembling of these wolves seems to be in strict accordance with their general habits. I have noticed that they usually roam in pairs, or singly. The female with her young, as a rule, keeps apart until her cubs are old enough to look after themselves. I have never seen young wolves under three parts full-grown with the

hordes. When the female has cubs she is very spiteful towards the male, and drives him away from her vicinity. But though they wander apart, they convey intelligence to each other in some marvellous manner, and soon assemble in numbers. If one or two meet with some large animal in distress, but yet too strong to be overcome by a few wolves, they contrive to make the fact known to their companions, and in a time, which according to my observations may range from an hour to a day, and in some cases to several days, they will assemble until there is a sufficient number to overcome it. Wolves which follow a party of hunters or travellers in hopes to steal a horse or mule, continually increase in numbers, as if conscious that they cannot assemble too strong a force to effect their purpose. In the case of Slaughter Pool, a small horde seems to have assembled for the purpose of pulling down a deer. My opinion is that this species of wolf only assembles when it has a predatory purpose in view. Hordes are most frequently found when the snow lies on the ground, probably because at that time large animals, such as bisons, elks, and deer generally, are more apt to get into difficulties, and are more helpless in the deep snow. The wolves run with facility on the surface of the frozen snow. I have never seen their feet break through the frozen crust as the hoofs of deer do.

The deer mentioned as found at Slaughter Pool were the white-tailed deer of the trappers, the specific name of which I am not acquainted with. I refer the reader to some remarks already made about American deer. I may here repeat that I am satisfied that the white-tailed, black-tailed, and several other locally named deer are merely varieties of the common Virginian deer. To my knowledge there are nearly, or quite, a dozen deer bearing the title of "species," which are certainly only varieties of the common deer found all over North America, and the reader will understand that wherever I use the word "deer" I am referring to the local variety

of the Virginian deer, and that "elk" means the wapiti, and not the true elk, which is the moose. At the time of which I am writing wapiti, called by the trappers elk, swarmed all over these Western regions. They were the most abundant of the species of deer found there, and, except in the Rockies, where they are scattered singly or in small parties, were often found in large herds. I have seen at least seven hundred in a single herd, but I am told it is extremely improbable that I could now find fifty together, so cruelly have they been persecuted and destroyed.

With regard to the puma, I have never traversed any extensive part of America without meeting with it. It has been exterminated in some of the old States now, but twenty years ago it was practically *the animal* of America; that is, it was the most universally distributed. It was found almost everywhere, from Canada to Tierra del Fuego.

The foxes spoken of as visiting Slaughter Pool for water deserve special mention, because I had never seen any like them before, nor did I ever again meet with this species. In the first place they were the smallest and most active foxes I have ever seen, much smaller than the common fox, with a shorter, but very bushy tail. They stood low on their legs, but ran with extraordinary fleetness, and were extremely active in every movement. The colour was very dark, especially on the back and tail, the greater part of the latter being black. There was some brown on the flanks and limbs, and the breast and belly was white, more or less pure. They kept well out of the way of the wolves, of whom they were evidently afraid, and were shy of us, insomuch that I could not get within shooting distance of them. Whenever I advanced, however cautiously, they ran away from the water, and as soon as they had succeeded in satisfying their thirst, they disappeared. I sometimes thought that I might be mistaken in thinking that this animal was a fox, and that it was really a species of coyote.

Both my companions called it a coyote, though they readily admitted that it was not the common kind, and that they had never seen any like these before.

The birds frequenting this pool were chiefly of the duck tribe, among them some large black ones of a kind found on nearly all the rivers and lakes throughout this region. Also a grey species, and at least five other varieties, one of which seemed to be a widgeon; but I could not make a very close examination of any of them on account of the circumstances in which we were placed, all of us being very busy in securing on the ruined waggon such articles as we had saved. Among the other birds the most remarkable was a flock of twenty beautiful scarlet flamingoes. As these birds were flying they uttered cries which most remarkably resembled those of wild geese. They remained by the water but a very short time, and they flew off in the direction of Salt Lake. I never saw any flamingoes in the water of Salt Lake, but I once saw a flock of long-legged birds fly over at a very great height, and took them to be herons or storks. I now think it possible that they were flamingoes. Do these birds migrate, or take flight over immense distances? I have seen them in districts one day and never afterwards, and again I have met with them in most unlikely places, of which this is an instance. A few small birds were seen near the water, but none of them recognised, and none were remarkable.

Near the pool there were three living trees and one dead. The frequency with which dead trees are found in the American deserts I suppose to be owing to lightning. Most of those we found bore unmistakable traces of having been struck, being split and blasted. How these few and scattered trees came in the first place to spring up in the desert is matter for conjecture. The seeds may be driven hither by the winds of tornadoes, which, I am convinced, often carry small objects hundreds of miles, but it is more probable that

they have been dropped by birds. Seeds often pass through the bodies of birds without losing their vitality, and if dropped in places more or less suited to them, sometimes germinate. That they are not in their usual habitat seems to be shown by the fact that they are usually dwarfed and of ungainly growth. Such odd trees seem peculiarly liable to attract electricity from the clouds during storms. Some in forests are also struck, but not, I think, nearly so frequently as isolated ones. Travellers taking shelter under trees (a dangerous practice at best) would do well to remember this. These scattered trees are greatly favoured as nesting-places by birds of prey and a few others, and you seldom see one without a huge nest of sticks or roots amidst its branches. I found the nests of hawks, vultures, and eagles in such situations, and the osprey almost always chooses such a tree, and especially a dead one, for its nesting-place. Some of these birds place nest upon nest until there are two or three cart-loads on the tree. The object of making a fresh nest every breeding season seems to be to cover the filth of the old one. All birds of prey keep their nests in a disgustingly dirty condition, and there is always a large quantity of ordure, castings (the indigestible part of their prey thrown up from the stomach) and remains of their victims.

These trees supplied us with a welcome stock of fuel, and from this point trees were found more and more frequently, as well as bushes, the latter being larger and better grown. Still the character of the country was little better than a desert. Much of the ground was absolutely sterile, baked hard, and starred with fissures, reminding me of many tracts in Arizona. The herbage was mostly in the hollows and gullies, but I noticed that wherever the rocks were so disposed as to shelter on all sides a few square yards there was sure to be grass and herbs with a few modest but beautiful flowers. It would seem, therefore, that the fierce cold winds which sweep

these deserts have as much to do with their sterility as the lack of moisture. The vegetation, although so scanty and dwarfed, seemed to partake of a semi-tropical character. I am no botanist and cannot refer to genera and species, but I saw many plants which I had seen in New Mexico, Arizona, and in other parts situated much further south than this. The general aspect of the country was dreary, and the prevailing colour grey, of almost every known shade; in some parts light, in others reddish or purplish, in others quite dark, but nowhere had the ground a green tint, which sufficiently testifies how scantily it was clothed with grass and plants.

It was not destitute of inhabitants, however, for in addition to quite a multitude of small rodents, hares, mice, reptiles and birds, we frequently saw herds of deer and elk in the distance. They appeared to wind us, for they kept well away, and when our stock of venison, obtained at Slaughter Pool, was nearly exhausted, and I tried to approach them to get a shot, I quite failed to do so. I doubt if I ever got within a mile of them, which shows that even at this comparatively early date they had already been much harassed by the miners and others. I expended the last of my powder and shot on the hares—large animals, dry and coarse, and lacking the flavour of an English hare, yet fresh meat, and therefore welcome.

We reached Carson on the ninth day after the burning of the waggon, and I was no sooner there than I was anxious to leave again. At that time the place was full of rough miners, most of them scoundrels of the vilest description, foreign cut-throats and thieves, with Yankee desperadoes and refuse from all the infernal dens of Europe. Fools who had "made a pile" (a very sorry pile in most cases) were spending it on some vile concoction they called whisky, one glass of which made a man drunk and two a raving maniac. Knife

fights and six-shooter fights were of daily occurrence, and if murders were noticed or avenged it was by Judge Lynch. Thieves caught in the act were shot or stabbed on the spot. Every man was his own constable, lawyer, judge, and executioner. Broils, fights, and rows! blasphemies, rascality, and vices! I was horrified, and felt in greater danger than when in hourly expectation of attack from the desert Indians. Those latter wretches would only kill a man where he could turn his dying face to heaven. These devils made the atmosphere smell of hell. One felt blasted by their contagion as by a black death. And there were women here; oh! God, such women! The men were almost clean compared with them. No pen dare reveal the abominations committed publicly by these lost wretches in their drunken orgies; abominations treated as excellent jokes to be rewarded by roars of laughter. What sort of place Carson is now I don't know. It may be a paradise, though I scarcely think that likely. I have seen it once; I wish to see it no more. The recollections it would conjure up would make me miserable, yet I do not wish to pose as a purist, and only say that the sights and sounds of Carson were horrible, and of such a nature that no man capable of feeling any delight in the beauties of the earth and with any sense of what is right, honest, and virtuous, could endure the spectacle presented to him in this Sodom of the West. The feeling that it inspired in me was terrible. I felt that it was impossible to remain there without sinking myself—sinking without the desire to do so; but without the power of saving myself. And I verily believe no man could have remained long there without either losing his reason, or else sinking to the level of the human beasts around him.

Yet the miners were not the worst men there. The scoundrels whose trade it was to plunder the unfortunate toilers, the obscene women who were the soul of every wicked act or treacherous crime; these were the creatures

whom it would have been an advantage to their fellow-creatures to have exterminated. For even in this horrible place there were men who still retained their natural kindness of heart, men whom a life of toil and suffering had taught sympathy for their fellows in distress, but who now, in the hour of temporary prosperity, were spending, or rather squandering, their hard-earned gains like fools. These men hastened to inquire how I came in the plight they saw me, and the shattered and charred waggon excited curiosity among all. I told them just what had happened, and there were generous hearts among them who wanted to give their sympathy a practical turn. That, of course, I could not accept, but I was glad when some skilled men among them offered to put the waggon in better trim. That was a real help to me, and when I saw a new tent-covering over it my spirits revived.

The companions of James Hartmann had been to Carson with their story of the Indian attack, but had not mentioned a word of their two comrades left on my hands, or of me and my waggon. They all got drunk within a few hours of their arrival, and remained in that state until their departure a week later. One of their number never recovered, but died drunk. They described themselves as prospecting miners, but they aroused some suspicion at Carson that they were a band of white thieves, a character that did not prevent their receiving a welcome there, since no one at that den had suffered personally at their hands.

Bob and my black both took more to drink at this place than was good for them, and they so enlarged and expatiated on the conduct of Hartmann that a band of drunken sympathisers came to the waggon (I still retained the man, and was striving to help him) to lynch him. With great difficulty I dissuaded them from their intended violence, for the man appeared to be dying, and it was evident that his leg ought to be amputated. The only medical men I could find in the place were two drunken wretches who were quite as likely to be pre-

tenders as not. I was referred to several others, but they were either away from home or pretended to be, and ultimately I placed Hartmann in a house where some black women offered to take care of him. About the character of the place or the women I can say nothing ; but it was the man's own earnest wish to be committed to their charge, and as he had sufficient money to make it worth their while to do justice by him, it was probably the best thing that could be done for him. These women soon found a surgeon to take off his leg, and the day before I left Carson I went to see him for the last time. He was in a sad state, and I thought his recovery hopeless.

I hurried from Carson in all haste. Those who have never seen the centre of a mining district in the West or in Australia can form no notion of the sort of place it was. It may be, and probably is, very different now. It was even then called a " city," and there were probably 10,000 or 12,000 persons in it on my arrival. How many of these were permanent inhabitants I cannot say ; probably not half. I have seen it stated as a quotation from an official return that in 1872 the population was between seven and eight thousand, but I suppose this estimation does not include the floating population of miners who are continually coming and going. I give no description of the town. I was too shocked to take any interest in it, but as far as I saw it was simply a collection of drinking-hells and " dives," as the licensed places of ill-repute are called ; but the usual State buildings, of course, are not included in this description ;—for Carson is the capital of the State of Nevada. The population of the entire State was said at the time to be fifty or sixty thousand, nearly all miners, or persons who prey on that class. The Pacific Railway runs right across it, and the distance from Carson to San Francisco is about 250 miles. The city was only about sixteen years old at the time of my visit, and I am afraid that most Western towns have had a similar baptism to that I have attempted to describe..

For several reasons, the chief of which were that I was upset and unwell, and in want of many things that I could not replace at Carson, I hurried away to Frisco. There I had a thorough rest, and replaced the losses the fire had occasioned me. Here, to my regret and disgust, my mule-driver Bob left me. The orgies at Carson had affected him differently to what I could have hoped, and he had the mining fever on him badly. He went back to Carson. Old Cooke, however, stuck to his colours. He had been a slave, and knew the difference between a good master and a bad one. "Nigger not much good in States now, old nigger no good at all," he said, as a sufficient reason for remaining in my service. He could neither read nor write, a state of ignorance not to be found among the coloured gentlemen of the present day, to Uncle Sam's credit. I tried to teach him, but in vain; though he made an honest effort to learn. He was too old. Yet his intelligence and his memory were remarkable. He carried an old Bible about with him, which, though he could not read, he would ponder over by the hour. "What dat tex? Read slowly, sah!" I complied, and he rarely either forgot or misplaced a single word of it. He knew hundreds of texts which he recognised in his book by the marks he had put against them. His greatest delight was to attend the mission tents. In summer the Wesleyans and others erect great tents in the woods and hold gospel meetings by the month. I have known old Cooke walk twelve miles to attend one of these meetings, sleeping under the trees for a week and returning punctually when his leave had expired.

"What would the gospel boss say if he knew you stole my whisky?" I asked him one day.—"Dat weakness all gentlemens hab, sah. No help dat."

Cooke was a sobriquet I gave him. His name was Urijah Pottle. All slaves had a Christian and surname for purposes of identification, which names were bestowed upon them at the will and fancy of their

masters. Pottle had been married. Two of his sons were killed by the Confederates at Fort Pillow. The third and a daughter disappeared during the war and never again turned up, and his poor old wife died broken-hearted at these troubles. Cooke himself was fit for little else than the business from which he was named, that of cook. With his savings and a little help he ultimately established himself in a small shop at New Orleans, near which city he had been "riz," and where I picked him up, and there I heard he died in '82 or '83.

The Rockies, the mountains in the Yellowstone Park, which are outlying points of the Rockies, the Sierra de Nevada, the mountains of Mexico and the Cordilleras of South America, have a feature in common which I have never heard, or read, or seen, to be an attribute of mountain ranges in other parts of the world, and that is the extraordinary colouring of parts of them. If you took an immense quantity of scarlet, vermillion, and yellow ochre paint and let it gush over the rocks it could not produce a more brilliant depth of colouring than Nature has spontaneously produced. Reds, purples, slates, greens, and yellows are combined in marvellous mixtures, and the name, often repeated in many widely separated localities, of "Painted Rocks," is a most appropriate designation for such mountains.

I may here remark, and it will be useful for the reader to bear the fact in mind, that self or pure colour is exceedingly rare in Nature. Nature, like the artists who imitate her, uses what they term "broken colour," that is, colour mixed with or reduced to a neutral tint. Almost the only instances in which pure colour is found in Nature is in the tints of flowers, the plumage of birds and insects, and occasionally in the foliage of trees. Most greens, however, except vernal tints, are broken more or less, some appearing almost black, as pines, hollies, &c. This is rather against clear and elegant descriptive writing. In describing the plumage of birds,

for instance, there are very few, except black and white ones, which have the whole plumage one pure or decided tint. The writer is compelled to use such indefinite language as "the feathers of the breast were pinkish, the back greyish with greenish reflections," &c. &c. But it is particularly in the general coloration of landscapes that dull neutral tints, generally of grey or brown, most predominate. In the coloration of the rocks I have alluded to, however, there need be no hesitation in unqualifiedly stating the colour. There is a spot in the Yellowstone region known as the Vermilion Rocks. They are vermilion, clear and pure! The sight of those rocks alone is worth a journey across the vast continent.

But it is in the desert mountains of Nevada, California, and the Yosemite region that the coloration of rocks is seen in their greatest perfection. Behold us standing near a vast chasm in the surrounding chain looking up at the Painted Giant which towers more than three thousand feet above our heads! What would be thought of the artist who dared to put those rocks upon his canvas? Would he not be thought a Bedlamite? I have never seen a picture, not even by an American artist, which truly represented these gorgeous tints. No artist dare put such colour in his rocks. His picture would not sell—his name would be ruined. No one who had not seen the rocks would believe such colouring possible in Nature.

I do not know what causes this peculiar coloration. I can conjecture that it is in various oxides, probably of iron, and possibly of other minerals, but this is purely guesswork on my part. At one time I thought that lichens might have something to do with it, but a closer examination convinced me that I was mistaken in that supposition. The colours do not join abruptly, but blend or run one into the other, just as if various coloured washes had been thrown over the rocks. There is a weather-worn appearance upon them, with many stains,

but not of a dark or dirty appearance. There is no lichens or mosses, except in isolated and protected spots, and no sort of vegetation is, as a rule, abundant on the mountains which are remarkable for this brilliant coloration. But this in some measure depends on locality. I have seen considerable pine forests with these masses of coloured rocks rising above them, and in the Sierra Nevada there are scattered trees as well as woods in the immediate neighbourhood of the scene I am attempting to describe. But in South America where I have seen rocks of remarkable coloration, they have generally been absolutely bare and extremely desolate to view, yet fantastic in shape and broken into abrupt crags like the Rockies and Sierra.

In the Sierra Nevada I never found any caves—at least of sufficient extent to be worth mentioning, but there are many exceedingly narrow ravines—clefts in fact—with sides as straight as walls, and so deep that the light is reduced to twilight. Some were so steep that I could not descend into them, others had torrents rushing through them at a great depth below, so that sometimes the water could not be seen, only heard. Others again were overhung with threatening rocks, which seemed about to crash down into the abyss below—no mere fancy; for there were abundant traces of many such falls. In places the ravine had not been wide enough to permit the falling rocks to reach the bottom, and they remained wedged between its sides at varying heights, so that it was possible to pass under them. Most of these ravines being very sheltered were choked up with a rich growth of vegetation, amongst which many beautiful flowers held a prominent place, delighting the senses not only with their lovely hues but with a sweet scent also, an unusual attribute, I believe, in mountain flowers; it certainly is in America.

Though I am no geologist, I can say that the formation of these rocks is granitic, but where they are

most highly coloured I suspect the existence of some of the inferior metals. The presence of these gaudy hues, however, is a sure sign that the precious metals and more valuable minerals of all kinds are not to be found. It is a singular fact that the more dull and rubbly in appearance the rock is the greater is its gold-containing qualities. Let the novice beware in this country of despising shabby looks in earth or human beings, if gold or heart be what he is in search of.

There is much difference in diverse localities in the appearance of the mountains. In some places they are broken and craggy; in others they swell in heavy rounded knobs without much, or perhaps any, jagged or riven portions. Sometimes solitary pillars, or upright rocks, show themselves, and there are any number of "pilot knobs" throughout the western region. Then again the mountains assume the form of cañons, sometimes wide, sometimes close and confined. Generally there are rivers at the bottom of these cañons, but not always. I consider the cañons the most distinguishing feature between the Sierra Nevada and the Rockies. I have heard it said that there are cañons in the Rockies. I have never seen any of the same character and appearance as those of the Sierra. In the Rockies they are rather abysses or chasms. In the Sierra they are usually enclosed by upright, almost vertical, walls, which is certainly not the case in the Rockies, unless, indeed, it is in the New Mexico portion of them, which I look upon as a distinct range; or at all events a detached portion of the Rockies, which it most certainly is, though to my great surprise I found that some eminent geographers were not aware of that important fact.¹

The celebrated Yosemite Valley is a cañon with cliffs of granite. It is this latter fact, which I find mentioned by other travellers, that enables me to speak positively of

¹ This was certainly the case, even in America, at the time the above notes were written.

many other portions of the Sierra being granite, for I perceived that they were formed exactly of similar rock. So much has been written of the Yosemite, and so well, that I scarcely feel justified in adding my poor mite. I may say, however, that not having read or heard much about it at the time of my visit I was surprised to find it of such narrow dimensions. As a rule the scenery of America may be described as immense—that is, illimitable, so that the eye has not sweep enough to take it all in at one glance; but there are spots, and the Yosemite Valley is one of them, where a great number of contrasting features are crowded together; and that is the chief reason, I think, why it is so justly celebrated. There are quite as grand, quite as remarkable features in other parts of the Sierra, but they lie widely scattered; and it would take a traveller perhaps a month to find as much as he can witness in the Yosemite in a few hours.

I confine myself here to simply giving my first impressions of the grand scenery of this valley. To commence with El Capitan: it is a huge cliff, or rather projection in a line of cliffs, considerably more than 3000 feet above the level of the river at the bottom of the valley. Accounts differ somewhat as to the precise height, and most of the official accounts I have seen give it above sea-level. The actual height above the valley is, I believe, 3297 feet. A man falling over the top would scarcely, I think, strike against a projection until he had nearly reached the foot of this enormous rock. The Captain is a sort of headland projecting from the line of cliffs, and at the apex is supported by a buttress that looks as if it had been placed there by human hands. In all other parts the rise is almost vertical. Perhaps it might be possible for a very courageous and experienced mountaineer to climb halfway up it; but I do not think he could get higher, or would be able to come down again. Here and there I could perceive a handful of herbage clinging to narrow ledges, and there is

vegetation at the top; but viewed generally from the other side of the valley El Capitan has the appearance of a huge mass of bare stone. At the foot of most mountains there is a bank formed of the débris washed down by the rain. There is little or none here. If any falls it must be washed away by the river Merced, which rushes violently through the valley.

The Merced is not very wide, forty or fifty yards perhaps, but it seems to bear along a vast body of water; and it forms some of the most awfully grand falls I have ever seen. They must be at least two hundred yards in height, and the sight of them made a much deeper impression on my mind than did Niagara. The roar occasioned by the falling waters was quite as appalling as that of the world-renowned Canadian falls; while the surroundings were indescribably more grand.

The whole valley abounds with falls and torrents. Cascades fall in a lace-work of silver spray, some from such a height that they reach the valley only as fine rain; and a few hundred yards farther on there is a thundering torrent with a sheer fall of many hundred feet. The Yosemite rivulet¹ falls over the northern cliffs into the valley, an absolutely unbroken fall of a quarter of a mile. To undergo the labours of an Hercules is to pay a small price for the privilege of viewing these wonders. It is not irreverence to say that standing in the middle of this grandly beautiful valley one is face to face with the majesty of God. But if mere height is the criterion of wonderfulness there is a yet more wonderful fall—the “Bridal-Veil,” with a descent of *half a mile*. “Bridal-Veil” is a much hackneyed name for waterfalls in the States. There are “bridal-veils,” “cathedral-rocks,” “painted-rocks,” “organ-rocks,” and “brothers” and “sisters” galore, and many similar names for rocks and falls.

The Bridal-Veil is, I suppose, so called on account of

¹ Called a “creek” locally; but “creek” is an Americanism for brook.

the whiteness and graceful spread of its waters. The quantity of water is, however, much less than that which rushes over the Merced falls. The sight of these falls is such as I imagine is not to be met with in any other part of the world, and such as I am quite incapable of describing. The sort of sensation which is aroused in the human heart when beholding a sheet of water falling from a dizzy height of probably more than a thousand yards is such as can only be imagined by an enthusiastic and excited mind. The waterfalls are, in my opinion, the most wonderful and striking part of the Yosemite scenery; and their number in so confined a space of ground is extraordinary, for in addition to those I have mentioned there are quite a multitude of lesser cataracts and cascades, many of the latter falling from immense altitudes, but they are eclipsed by the grandeur of their neighbours.

Next to the falls the pinnacles and columns of granite claim attention. These "cathedral spires" are very extraordinary, and it puzzles me much how they were formed, for the cliffs and domes of rock show but little signs of weathering, such as is the evident cause of many of the jagged and fantastic shapes which I have noticed in rocks of a different formation. Several of these "spires" are slender columns of great height, so that the spectators cannot but feel surprised that they continue to stand against the frightful tornadoes which sometimes visit this region.

I witnessed one of these tornadoes, accompanied by terrific lightning and torrents of rain, which flooded the river to such an extent that it became a seething cataract occupying in places the entire width of the valley. We had a narrow escape of being swept away, and where the full force of the blast was met it was impossible to face it. We were several times blown completely off the ground and thrown down with great violence; but these are not uncommon experiences in other parts of America as well as here. There is a tradition that a few years ago

four men were blown over El Capitan. It is said that the strength of the wind was so great that when they went over the edge their fall was for a moment retarded by the tremendous force of the blast. As they reached the sheltered depths of the valley, however, they fell with terrible force. Two fell into the river and were instantly swept away; one was dashed to atoms, and the fourth, although he fell into a tree, was dismembered and cut in two. Their companions, horror-struck, and fearing a similar fate, lay flat on the ground for many hours, afraid to move until the wind abated.

In our case the noise produced by the wind and the rush of water was deafening. Above the roar was heard a screaming and also a groaning noise, very appalling. I have referred to noises among the mountains in my description of the Salt Lake, and have stated the probable cause. These noises greatly frightened the superstitious Indians in former days. Whole regions were abandoned and never visited in consequence of the fright occasioned by these incomprehensible sounds. The sound of the thunder was so loud and peculiarly intense that I sometimes thought the rocks were falling. There was not, however, any falls such as I have witnessed during storms in other mountainous countries. Indeed, these mountains seem to resist the wear and tear of the weather to a remarkable degree. As I have already mentioned, there was but little débris at the foot of the rocks from this cause, which is an uncommon circumstance according to my experience.

The rain caused many fresh torrents; in fact they flowed over all the cliffs for hours, and in some cases for days, after the tempest had subsided, which shows that in mountainous countries many of the falls are not permanent, but depend upon the rainfall. Whether such tempests as that I have mentioned are of frequent occurrence I cannot say, but the valley, both here and higher up amongst the mountains, was well provided with trees,

bushes, and shrubs. Many of these were swept down during the storm, and I noticed that whenever they fell into the river they were sucked down into the depths and never appeared again. There were many fallen trees in the valley, in all stages of decay. There were several species of pine growing here, amongst them the *Sequoia sempervirens*, some individual trees of which must have exceeded two hundred feet in height. Wherever there was a sufficiently gradual slope to afford them support the bases of the mountains were clothed with dense pine forests, and there was plenty of good grass in the valleys.

The highest mountains I have seen in North America were in the back ranges of the Yosemite. They towered to a very great height indeed. I know that two of the points exceeded 12,000 feet in height, and it seemed to me that at least twenty other peaks closely approximated this height. They were covered with perpetual snow and presented a grand sight. The summits in all cases appeared well rounded or dome-shaped, and many of the mountains were tent-shaped in outline. It was necessary to get among these mountains to discover their most imposing features. Not infrequently two or more peaks clustered together had a remarkable similarity of outline. An American gentleman afterwards told me that this was often the case, in all parts of the world, among mountains of a granitic formation. The same gentlemen also informed me that wind storms in the Sierra were very rarely accompanied by rain, that thunder and lightning was not common, and when it did occur it was almost always in the mountains.

I spent about six months exploring these mountains and in the Colorado Desert, and I believe, if I may say so without appearing to boast, that I was the first European to penetrate to some of the remoter spots. Everywhere in the Sierra range I found forests, grass, and water. Many of the falls rival those of the Yosemite

Valley, but nowhere are so many marvels collected in so small a space. I paid particular attention to the natural history of this region, and for the benefit of those who delight in that branch of science I here give the principal items of my notes, avoiding as much as possible what the general reader might consider dry details.

At this time (1875) the grizzly bear was very abundant in the remoter recesses of these mountains, but the herdsmen had already commenced their terrible poisoning of these fine animals. During the six months I have mentioned I saw about sixty, and shot two. Of course I might have destroyed more, but I hold in utter detestation the wanton slaughter of any of God's creatures. It is, in my opinion, a wicked act, as it certainly is a selfish one; for in exterminating any mammal or bird, you not only destroy one of the earth's chief beauties, but also deprive future hunters and naturalists of one of the attractions of their respective pursuits. The two bears I shot were slaughtered for the sake of their skins, of which I had need, and almost for the only time in all my experience I was placed in some jeopardy by one of the brutes—a large female. It took no fewer than nine bullets to kill her, perhaps on account of my bad marksmanship, but I am more inclined to think owing to her extraordinary tenacity of life. Fortunately she did not display that ferocity that the grizzly is usually credited with, and at first devoted her energies to attempting to get away. At length, however, she turned upon me, and I was caught in a nook between two rocks with both barrels of my gun empty (I was using a muzzle-loader). With a shudder I gave myself up for lost, but when she got within eight or ten yards of me she suddenly went down on her knees. She was not dead, however, and I had only just time to hastily ram down a bullet when she rose again. She had actually raised her paw to strike when I shot her through the head. Two of the nine bullets, although fired from a muzzle-loader, had actually

gone right through the carcass, and the skin was much perforated. Later in the same day I shot another, and smaller grizzly. This one was killed with a single bullet in the head. As it was a male I concluded these bears to have been a pair temporarily separated. The male was not more than two-thirds of the size of the female, and I could perceive that he was quite a young animal. It might, therefore, have been the female's nearly full-grown cub.

One of the greatest attractions in the Yosemite Valley is the Mirror Lake; so called from the remarkable distinctness with which it reflects the surrounding objects on the surface of its clear and smooth waters. I found several other lakes of a similar character in the Sierra, though smaller in size. One of them, which I guess to be about seventy or eighty miles south of the Yosemite, was a tarn, pear-shaped, and some four or five hundred yards across at the broadest part. It was situated at the bottom of a steep-sided gully, which was choked with pine-trees near the lake, and the water could only be reached with some difficulty and danger of tumbling headlong in. The surface of the lake, which was at least five hundred feet below the surrounding cliffs, was literally as smooth as glass, and reflected the trees and rocks so distinctly that it was difficult to believe that it was water until you were close to it. The general appearance of the place was exceedingly dark and dismal, yet withal picturesque. I had no long line with me, but with the aid of joined fishing-lines and other small cordage, I ascertained that there was no bottom to this tarn close to the shore at the great depth of 485 feet. At other places there were submerged rocks close to the shore, which prevented a measurement being taken. The water was so clear that the rocks could be perceived looming up from the depths more than a hundred feet below the surface. At other points the water could not be approached owing to the steepness of the banks, which

were quite vertical. I perceived that this tarn contained fish, some of which seemed to be nearly a yard long. After much trouble and the exercise of great patience, I caught two trout. One weighed six pounds, the other about four. They were not very good eating, lacking flavour. Large shoals of another fish were seen swimming close to the rocks. They were small—nine or ten inches long, shaped much like a sprat or small herring, and gleamed like silver in the water. They seemed to keep near the surface, but none were caught. No other living creatures could be found in the lake, but the surrounding trees were frequented by several species of small birds, and the lake itself by ducks and other waterfowl, one of which was a species of widgeon.

One of the ducks was of a kind noticed in my account of the journey through Utah, in which the males are black in colour and the females grey. There was also a pintail duck in small numbers. But the most remarkable was a crested duck. The plumage of this bird was mainly black and white, the neck black, and the large bonnet-shaped crest white, with a broad black edging. The female was a less conspicuously coloured bird, grey predominating in her plumage. There was a great flock of these ducks, probably a thousand or more, on the lake, and several were shot for food. They were excellent eating. I had never seen any like them before, but several times afterwards I saw the same bird in great numbers in Oregon.

While at this lake I saw four sea-gulls fly across in the direction of the Pacific, which I supposed to be nearly two hundred miles distant. It is not an uncommon thing for gulls to take journeys far inland, but this was the only occasion on which I saw any in this region. They were flying low enough for me to perceive that they were of a species which I had seen on the rocks near San Francisco. The only difference that I could perceive between it and the common English gull was that it was

larger, and that the outmost wing feathers were black. It is not the commonest kind of gull at Frisco.

A splendid pair of ospreys haunted the lake, and had their nest in an inaccessible tree close to the water. I saw the male bird catch a splendid trout, much larger than those I hooked. He rose above the surrounding cliffs and let it drop, playfully I think, for he swooped and caught it again long before it had fallen halfway to the water.

It is singular that I could not find any crustaceæ or water insects in the lake, though it is true it was exceedingly difficult to reach the water on account of the precipitous banks. In only one or two places was it possible to touch the water, and that at great risk of slipping in; but still I think the creatures I have named were absent from the waters of this tarn. How, then, do the fish live? Probably by land insects which fall into the water. On the banks surrounding the lake I found great numbers of beetles, ants (three species), grubs, and chrysalis, besides hymenopterous insects, &c., and other flies. Of the chrysalids secured by me, nine produced moths, and two butterflies. Several of the moths were species which feed exclusively on pine-trees. The butterflies were yellowish with brown markings, and a red and black kind. Several of the latter were already out and fluttering about the lake, though it was still very early in the year (March). It was not until the end of the following month that butterflies, moths, and ants were noticed in other parts of the Sierra. But this lake, lying in a deep hole, as it were, was much sheltered, and probably insects, &c., appeared here much sooner than usual. There were also great numbers of spiders. Nine species were found. From the nature of the locality great numbers of these insects must have rolled into the water—sufficient, I think, to feed the fish.

Of the small birds there were several kinds of finches. A pair of crossbills had their nest in one of the pines,

and early as it was, they had begun breeding. There were two eggs in the nest; but apparently our visit caused them to abandon it, for no more were laid, and a day or two afterwards the birds were discovered building in another tree which actually overhung the water at a great height. Indeed, the tree looked as if about to lose its hold of the rocks and fall into the lake, two hundred feet beneath. The male crossbill was crimson, with brown wings and tail, the breast lighter red than the upper parts; the female was greyish-green with brown markings.

The most abundant bird here and in the neighbourhood was a small nuthatch which fluttered about the trees in flocks of twenty to fifty. It was a restless little creature, continually on the move, and keeping up an incessant twittering. Frequently flocks flew across the lake at about sixty feet above its surface, going backwards and forwards to the trees on opposite sides without any apparent object except love of change. Sometimes they squabbled among themselves like sparrows. They were very tame, and permitted me to stand within a few yards while watching them. The dead trees were full of small holes which I supposed to be the breeding-places of these nuthatches; but they had not commenced nesting, nor were there any nests in the holes. The birds were constantly flying in and out of them, and roosted there at night, for some were captured there after dark. This nuthatch, the smallest I have seen in America, was greyish-brown in colour, with a bluish back and tail, and some black streaks about the head and cheeks. The outer feathers of the tail were mottled with white, and the breast and belly were white, deeply tinged with reddish.

There was also here, though not in the confined lake valley, a grey titmouse of small size, remarkable for the plaintive squeak or cry which it kept up. It was not very abundant, but eight or ten were usually seen to-

gether. This bird was more abundant near the base of the mountains; but we met the nuthatch at a great elevation, sometimes up to the snow-line. There must be great numbers of small birds migrating in the spring and summer to this region to breed, for we found great numbers of old nests in the trees and bushes, and also on the ground in sheltered nooks. The rocks above the lake were full of them. The different sizes of these nests and variation of construction was sufficient to show that they were the work of many kinds of birds; but none of them could be identified with certainty, birds of a genus as a rule making very similar nests, especially in North America, where, according to my observation, nests are generally constructed in a loose and perfunctory manner, many birds doing without nests altogether, or simply roughly lining a hole in a tree or on the ground.

The ruby crest was another bird noticed here, haunting thick forests in the valleys where it was building. They were using wiry grass mixed with deer hair and moss for this purpose, and feathers for a lining. None of the nests we examined had eggs as yet. This bird is met with in many different and widely separated parts of North America. It is, in fact, a well-known bird in the States, and with good reason, for it is a sweet songster, which few American birds are. It takes its name from the male bird being furnished with a bright crimson crest. The rest of the plumage is dull above, and light on the under parts.

Other birds seen in this part of the Sierra, in addition to several finches which could not be identified, were three owls, one of great size appearing to me to differ from the eagle owl of the Atlantic States only in being of greater size. Another was the common screech owl of the States, and the third was the little ground owl which invariably shares the holes of the prairie dogs and other burrowing animals. Here, however, it was living alone in burrows which I suppose it had made itself. These

burrows were generally enlargements of crevices in the rock, and penetrated so deeply that all my efforts to reach to the chambers of one failed, although I dug nearly twenty feet. I found the tunnels to turn and twist so that I could not force in a stick to the end. Not one of the burrows ran straight; nor in any of them did I disturb snakes, though several of these vermin were found among the rocks, as well as a small species of lizard or two, which, however, do not require notice here. The same species were seen near Salt Lake and throughout Utah. This burrowing owl is really a very remarkable bird, if it is only on account of its great range, which extends for many thousands of miles. It is found in nearly all the open country and plains of both North and South America.

A buzzard, a hawk, a butcher-bird or shrike (seen also near Salt Lake), a swallow (nesting in cliffs), and the Californian quail complete the list of birds particularly noticed in this district. But in addition several others were seen under circumstances which precluded my taking particular note of them. For instance, one evening a covey of partridge-like birds suddenly rose from a tuft of grass and flew away so rapidly that I missed with both barrels, so I am unable to say of what species they were. I suspect them to be sage-hens; but if so, it is the only occasion on which I have seen that bird at so great an elevation (about 4000 feet above the valley), and there were no sage bushes growing here—not that I believe that the bird is dependent on that particular shrub, though it usually feeds on the young shoots of it.

Of other animals there were the elk and two other species of deer, already described as inhabiting the entire district at this time; several species of mice (two of which were common in Utah); and an animal of the stoat or weasel tribe, which appeared to be nocturnal in its habits and was only seen twice. On both occasions it

got away though fired at, for its movements were exceeding agile.

Insects were numerous, but there was nothing remarkable noted about any of them. The mosquito was not seen here; but a dragon-fly, glittering in pink, blue, and gold, was attractive on account of its extreme beauty. It was not found at the lake, but haunted quiet pools on the course of the mountain streams. Seven species of snails were found (most of them empty shells lying in little heaps), one of which was red with brown rings, and another marked with dark blue rings.

On the 28th of March I saw an enormous flock of ducks flying south-eastward, at about four o'clock in the afternoon. It was a bright, beautiful evening, and the birds showed up well against a clear sky. One part of the heavens was darkened with them. They flew in a solid, straight column, and in my opinion numbered several hundred thousands. At all events it was the largest flock I ever saw in any part of America. I further calculate that the column was at least twelve miles long. It was a sight never to be forgotten, and must almost have equalled the former great flights of passenger pigeons.

I must hasten on to the Colorado region, concerning which my remarks must be brief. On the low grounds, before entering the Colorado Desert, I was almost daily amused by that singular bird the Californian road-runner. I cannot say that the bird was particularly numerous here. It is difficult to say. One would keep by us, running on ahead, for a considerable time. Suddenly it would disappear, and then after an interval of a few minutes, or perhaps half-an-hour, show itself again quite close to us; but whether it would be the same bird or a fresh one I cannot say. It ran a distance of two or three hundred yards very quickly, then stopped, and waited for us to come up. It permitted us to come very close; but just as I thought I could almost reach it with the hand, off it would dart with extraordinary speed, presenting a most

curious appearance, as it literally flew along the ground. Again it would stop and wait, and then on again. It always seemed to disappear when it was not being watched, until my curiosity was aroused, and I kept my eye constantly fixed upon it. I then saw that when it got so far ahead as to be almost out of sight, it ran away to the right or left as the case might be, and hid behind a rock, bush, or similar object, large enough to completely hide it. A singular circumstance was that it always kept to the one side of our track. (There was no beaten road here.) If it first appeared on the left it kept to the left; if on the right, to the right. It always ran: never willingly taking to the wing. My driver tried to knock one down with a stone. It hopped up to avoid the missile, but did not fly away. I seldom saw two at the same time. When two did appear, they were generally chasing each other, the courting season being evidently at this period of the year. I saw this bird very frequently afterwards; but never once saw more than a pair together, and that but seldom as I have said; nor did it often fly. When for any reason it took to the wing it flew but weakly and slowly, not rising higher than five or six feet from the ground, if so high; just clearing objects in its line of flight, indeed. I heard it utter several different kinds of notes. The cock made a shrill, whistling sound, an angry tone, when pursuing the hen. At other times both birds made a low twittering sound, keeping it up continually. When the bird reappeared after running ahead, it often gave a loud prolonged note, which I can only represent by this word—Jar-r-r-r-r-r, rattling the r's for fifteen or twenty seconds. The object of following us so persistently seemed to appear at evening time. For when the mules were picketed for the night, the road-runner immediately flew up to their backs and pecked among the hair, evidently searching for parasites. In the early morning I found a pair engaged in this work; the mules standing as quiet as lambs, enjoying the luxury of being

freed from their tormentors. I got to within two yards of them before the birds flew off, the cock uttering a loud Jar-r-r-r-r-r, which is evidently a note of anger or impatience. They only retired a few yards, running quickly backwards and forwards, twittering to each other, and the cock every now and then repeating his peculiar cry. As soon as I was out of arm's-reach they returned to the backs of the mules: and for days together we were followed by one, and sometimes two.

The bird is more remarkable for its shape than for the colour of its plumage. It is about the size of the domestic pigeon; the head is heavy, and has a crest of grey mottled feathers; and the beak is straight and rather long. The tail is over a foot in length, and composed of long straight feathers, which are nearly the same width throughout; and there are a few broad overlapping feathers at its base. The legs are of fair length, strong, but not particularly stout, and the four toes are placed two forward and two behind; all being furnished with short curved claws. The colour of the plumage is greyish brown above, with streaked spots of rust colour and faded white. Beneath and on the breast it is dirty yellowish streaked with very dark brown. The iris of the eye is bright copper red; the eye itself is surrounded by naked skin of an indigo blue colour, merging into bright red on the ear. When standing still the bird carries its long tail sloping upwards at an angle of about forty-five degrees, but when running stretched straight out parallel with the rest of the body—the head being thrust forward apparently to maintain a true balance of body. Occasionally, when running, the bird droops its wings a little, using them as sails, or propellers, to increase its speed. The wings naturally droop a little, the ends projecting beyond the base of the body.

When I first saw this remarkable bird I had not previously even heard of it, and could not tell in what family to place it. It never once entered my head that

it was a cuckoo. Such, however, it seems is the place assigned it by naturalists; and I, of course, have no objection to offer to their decision. But it is a curiously specialised bird, with habits not at all like those of other cuckoos. I could not discover that it consumed other food than insects and snails. I saw it break the shells of the latter in the same way as the English song-thrush, by giving them a sharp rap against a stone or rock. I never saw it in the neighbourhood of water: it is eminently a desert bird. Nor did I ever find it in a wooded country, or where the ground was thickly covered with bushes.

I was very anxious to learn the breeding habits of the road-runner, but utterly failed to find any trace of the nest. One day, however (it was the 13th May), I saw a road-runner come from under a very thick but stunted thorn-bush in the desert, about ten miles from the river Colorado, and sixteen miles below the junction of the Virgen River. The bottom of the bush was choked up with bent and weeds, and I could not see the least sign of nest or eggs. Having met with many failures, however, I determined to be sure in this case, and know certainly whether the bird was breeding there or not. So I proceeded to cut the bush away: no easy job, I can assure the reader, for the bush was very closely grown and full of thorns an inch long, and strong as steel. At the end of two hours I came to the nest. It was the most cunningly concealed I have ever seen. A hole in the rock was neatly lined with thin grass and *bear's hair*: and there lay three grey eggs, quite without spots or markings. They were very small for the size of the bird—not so large as those of the thrush, but beautifully oval in shape. The nest was completely covered with growing grass, apparently drawn over by the bird, which had made a tunnel-like opening through the roots to reach the nest; so small that I should have thought it a mere mouse burrow had I not found the nest—a

proof, in my opinion, that the bird designedly covered her breeding place. After a very diligent search I found another nest precisely similar to the first one; and about two miles from it. This also contained three eggs. I have written that this nest was precisely similar to the first one. I ought to say that the hair mixed with the grass lining was of some animal which I could not recognise; apparently a small rodent. I have italicised the words *bear's hair* in the description of the first nest, because I consider it a most extraordinary thing that the bird should have access to such a material in this district, where I never saw the slightest sign of the presence of bears. Considering how easily mistakes occur, and errors are fallen into, I would point out that I saw no road-runners near the second nest, and was only led to believe that the first belonged to that bird through seeing a road-runner come from beneath the bush. It is possible that the bird might have been there in search of food, or for the purpose of plundering the eggs I found.

The Colorado Desert is bad enough, but not such a terrible place as Utah, in my opinion. If such an oasis as Salt Lake City can be raised in Utah, much more could one be made here, I think. Water is the one requisite. The lack of it seems to have driven the very game away; at least I met but very little during my journey. The Indians, who scantily inhabit this district, are obliged to some extent to be agriculturists to live. They grow corn; but they have to sow it in the ground as we do pease and beans, otherwise it withers as soon as it springs up. I found them burying it fifteen or sixteen inches deep. They say that at that depth the roots find moisture, and the corn once up out of the ground, grows and ripens quickly. Wherever it is possible to irrigate, the crops are wonderfully strong and prolific. It rains but very seldom, and there is little or no dew at night, but the effects of a single shower are marvellous, and very lasting. A gentleman of great experience in this

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region told me that half an inch of rain often meant the salvation of the Indian crops. He stated that a total fall of about three inches meant quite a wet season for them. It very seldom exceeded that downfall, and often not a drop fell during the entire year.

The Indians of the Colorado Desert are not so fierce and dangerous as those in the adjoining States ; still they do occasionally plunder travellers and murder them. I faced the risk and had no reason to repent so doing. I got on quite friendly terms with several of their chiefs, and an interchange of little kindnesses begot such confidence that I at length reposed perfect trust in them. This was of very great advantage to me as I could always command such help as I required, and having only two followers I naturally often had work for other hands. Besides, if I had a few Indians with me I found that I had nothing to fear from wandering members of the tribe I might chance to meet, but was sure of a friendly reception. During the whole of my intercourse with these poor people I was never robbed of even a trifling article. They live in great poverty, and notwithstanding that they, in common with other North American Indians, are entitled to assistance from the United States Government, I was told that deaths from starvation were frequent. In these outlying Western States, at the time of which I am writing, the officials and agents were most corrupt ; and the Indians, when applying for their rightful allowance, were not only often told to go to the devil, but even crueler methods were resorted to to drive them away. Very few of them had firearms, and not many bows and arrows. The spear was the commonest weapon among them, and even that was not universal. As they told me, big game was not abundant enough for them to depend on its pursuit, and they dared not for their lives trespass into the territory of their neighbours the Navajos and other wandering tribes who, unlike these Colorado Indians, are most warlike, and treat even white men,

when they chance to be on friendly terms with them, most haughtily. The Navajos and kindred tribes are all mounted men and splendid horsemen, while there are scarcely any horses among the Colorado Indians, nor do they lead such wandering lives as the Red men of the more Eastern States. These Colorado Indians mostly belong to a tribe calling themselves the Mokees. I have not been able to trace their origin, but they seem to be the remnant of a great tribe once inhabiting the whole of the plains between the Sierra Nevada and the Virgen River, as far north as the Humboldt River. That is a distance of four hundred miles by a hundred and fifty to two hundred. They have all the characteristics of the Redskins, but are not warlike. Although of absolutely the same race, there is much difference among the Indians in this respect. Some tribes were much more given to war and generally aggressive habits than others. But I have already said much concerning the Red men.

The Rio Colorado is without a parallel on the earth's surface in the extent and depth of its gorges—called cañons here. (The word is pronounced kan'-yon by Americans.) The grand cañon is more than three hundred miles in length, but all the tributaries and streams which join it run through deep, rugged, and narrow gorges, rivalling in grandeur and weirdness the main stream itself. In a word, my impression of Colorado is that it is a region of *buried rivers*. Most of these rivers (including even the brooks) have beds at least a thousand feet below the surface of the surrounding country. That country is a desert, as desolate and arid as any in America, but with this peculiarity, that there is plenty of water. I am speaking, of course, of the Colorado basin. The reason that that water fails to fertilise the soil seems to be because it is sunk so low beneath the surface. The tributaries of the Colorado are so numerous on both sides that no ordinary map records a fourth of them. At the time I made my journey the best map I could procure at

Frisco, which on the face of it appeared a good one, turned out to be useless. Not a twentieth part of the creeks and cañons were marked.

I have formed a theory of my own as to how the Colorado cañons were formed. If the reader will turn to my account of New Mexico he will find there a description of certain fissures or crevices which seemed to have been formed in the earth by the dryness and great heat. This district seems to have been in the same state. Water found its way into one crevice and soon by its action enlarged it. As the body of water was increased it widened the crevice until it made a deep gorge. The sides of this gorge falling in, still more increased the width until it became a valley with a deep gorge at the bottom. This process went on until the valley was ten miles wide, and 6000 or 7000 feet deep, with precipitous sides, and the gorge at its bottom reduced to a deep cutting with still more precipitous sides. This at all events is an accurate representation of the Colorado gorge. The valley through which it runs is sunk some 6000 feet, the cañon itself is a thousand feet deeper. As to the valley and the surrounding plains, both alike are cut through by innumerable streams and rivulets. The quantity of water in them, perhaps, is not great, but for the most part they are permanent watercourses. Torrents are not noticeable; it would rather seem that here the water has eaten deep into the earth instead of forming cataracts and falls.

As to the general appearance of the country it would be very difficult, I think, to give an accurate impression of it by a mere written description. However, let the reader imagine a country which has long been submerged, suddenly drained, and the last remains of the water left as mere dribblets at the bottom of deep and gloomy gorges, and he will have some idea of the Colorado region. The vegetation is of the scantiest nature. A few bushes scattered about, but nowhere forming a thicket. No

trees, unless a few of the larger bushes can be dignified by that name. As the eye wanders over the dreary landscape it forms the impression that neither grass nor herbage clothes these desolate plains. That, however, is an erroneous impression. A closer examination will lead to the discovery of a few tufts of withered grass (three or four species in fact) and a number of miserable weeds, a few of which bear tiny inconspicuous flowers. These plants are such as I noticed on all the arid ground in the neighbourhood, and except for saying that the ground was not absolutely destitute of vegetation would not be worth noticing. There are sage bushes in places, but that shrub is not the dominant bush of the region. The chief attraction here is not the natural productions, but the cañons, and we will begin by describing that of the main stream, the Colorado.

Standing on the edge of the valley and looking across to the opposite line of cliffs, the sight is first attracted by the extraordinary and fantastic shapes assumed by the rocks. These forms have been compared to distant views of cities, castles, and cathedral spires. All these may easily be imagined; but to my view the scene rather represented an elaborate filigree of rock-work — very beautiful and very wonderful. And then the magnitude of the scene! that baffles all description, as does the coloration. It happened to be near sundown when I obtained my first view of the Colorado Valley, and no better moment could have been chosen had I fixed the time beforehand. Although it is fully ten miles across the valley, the setting sun so lit up the opposite rocks that they stood revealed in majestic outline, and tinged a thousand hues of actual or reflected colour. The intervening valley did not appear particularly rough, and the river which ran through the middle of it was not visible, though I could trace its course by the gorge through which it ran. A dozen other gorges of tributaries could easily be followed by the eye, but neither in these could

water be seen in any part, so deep were the cañons, though I stood fully 4500 feet above them.

So impressive was the distant sight that for a long time I gazed on it quite oblivious to nearer objects. When, however, I approached nearer the edge of the cliff on which I stood and looked downwards I felt like one in a dream. The multitude of wonders beneath me was positively dazing. Let the reader be the most imaginative man breathing, and let him fancy the wildest shapes and forms that rock can take, he will utterly fail to picture in his mind the wonderful figures here standing rampant. In many parts of the States there are extraordinary natural forms in the rocks, representing the heads and features of men and animals; all were repeated and multiplied here in endless variety, with new forms galore. Rock-lace-work would be an appropriate term to use for much of the intricate mass that lay below them.

The prevailing colour of the rock was red, approaching scarlet in places—hence I suppose the name of the river (Colorado), for the water itself has no tinge of that colour—and the hue was intensified by the rays of the setting sun, which cast a fiery glare on the rocks, so that as it sank low the valleys lay in a dark purple shade, fading into intense black in the ulterior depths, while the rock stood out from the obscurity like red-hot pinnacles. I never saw a more wonderful or curious sight, for it was impossible to trace the outstanding masses and columns to their bases in the approaching gloom of night; so that just before the sun sank below the horizon the summits looked like fantastic shapes in glowing metal, suspended in mid-air. The centre of the valley was dead black, while the cliffs on which I stood were still aglow with the fiery rays of the sinking sun.

There is no great difficulty in descending into the valley from the first line of cliffs. The rocks are so broken, jagged, and weather-worn that a bold climber can find dozens of tolerably easy descents. Of course

care and discretion are necessary. It is only necessary to say that the cliffs seem nowhere to stand less than 4000 feet above the valley to prove that; and in most places they rise very abruptly. The descent of the actual gorge to the water of the river, though only about one thousand feet, is a far more dangerous and ticklish business. Still the plucky traveller will not search long before he finds a practicable path to the depths below. It is when you have reached this lower depth that you begin to feel what a terrible prison you would be in should you fail to find your way out again. Travellers at the present day can avoid these dangers and difficulties, for not only are there hotels at the principal points of interest for his accommodation, but the descents from the cliffs to the valleys below have in many places been "improved" to facilitate his movements and render them safer, so that even ladies now descend with the aid of an alpenstock; and special rough dresses may be hired for the protection of the clothes of the adventurous. In the contest between danger and the dollar, the dollar has won; and where in former days a traveller had to search the marvels of the wilderness at the peril of his life, armed to the teeth and in constant danger from all sorts of risks, now all he wants is a purse. Armed with that he is safe from both peril and discomfort—hold! He has still to face the *bill-maker*, who is a demon even in America.

With regard to the river itself, I had expected to find it a dangerously rapid stream. Such, however, is not the case. The current runs tolerably strong, it is true, but a boat, if carefully navigated, is safe in its waters. It is full of shoals and rocks, and these constitute the chief danger. In some places there is sufficient fall to cause a rush of water, and the foam rises against the bases of the rocks; but a voyager who has had experience in Canada would laugh at shooting such rapids as these. Nowhere could I find any depth of water, but there are a few holes here and there in the bed of the river. I tried the

waters with hook and line, but failed to obtain fish, nor can I say whether any harbour in its waters, though I have heard that a species of salmon has been taken from them in great numbers. This seems likely from the nature of the river, but not the slightest signs of these or any other fish were found by me.

All kinds of animal life were scarce here. Looking up to the gloomy impending rocks overhead I could see no birds flying across the narrow strip of sky visible. None perched on or fluttered about the rocks. Not even the seldom absent hawks appeared on high; probably because there was no prey for them. On the valley cliffs away from the river a pair of Californian condors had made their nest, at an altitude of about 1200 feet. The nest appeared to me to be out of human reach, but my companion, in spite of my dissuasion, climbed up and brought down the eggs. It was an awful sight to witness him creeping up the face of an almost perpendicular cliff until he was reduced in apparent size to a mere ant. One false step and he must have been cut to fragments by the jagged rocks long before he had fallen to their base. The birds flew about him when he neared their eyrie, uttering frantic cries, but did not make an attack; and after the robbery they remained perched on the rocks so high up as to be almost invisible. This pair was the only one seen in the district. They did not forsake the locality after losing their eggs, but were often seen wheeling about in majestic flight, quite equalling in grace and ease that of the Andes condor. The Californian condor is not so large as the South American species, but in spread of wing it quite equals it, so that viewed soaring on high it is not possible to distinguish the difference between the two birds. The eggs of the Californian bird taken here were two in number, violet-tinged grey in colour, without spots or marking. Those of the southern species are dirty white in colour and two in number.

Everywhere the river cliffs, like those of the valley, are extremely rugged and jagged, as though worn exceedingly by the weather. But it is hard to believe that the weather is responsible for the fantastic and deeply cut figures seen here, considering that the rainfall is quite insignificant (less than a tenth of the English average). Yet I cannot imagine what other cause to refer it to. Could there have been a greater rainfall here at a past period? or were these curiously complicated spiracles and turrets formed in a lighter soil which has crumbled away from them through the action of the river?

All the tributaries of the Colorado had, like the parent stream, cut deep into the rock. I explored two of them for a considerable distance. One with a width of not more than twenty yards and a depth of a few feet, had cliffs of an estimated height of ten or twelve hundred feet, as rugged and picturesque as those of the Colorado itself. All these rocks were quite bare of vegetation except a few lichens, and were more or less brilliantly coloured, as I have already mentioned. The gloom in this particular cañon was intense, a mere twilight in places where the rocks overhung, so that they nearly met and formed a tunnel. Even when the sun was vertical there was but little light in many parts of this cañon. I followed its course for about forty miles, when the bed was so rocky and the current so tumultuous that a canoe could no longer be used. Throughout the entire distance traversed, which, as I made many stoppages by the way, took four days going and returning, I saw no creature, not even an insect, possessing life; nor so much as a weed. I noticed, however, a lichen about the size of a sixpence, and so much like a fungoid growth that I was uncertain which class to assign it to. It did not grow higher on the rocks than about four or five feet, and was consequently dependent for existence on the moisture from the stream. It looked like a small, stemless mushroom. In the bed of the stream the stones were

sometimes covered with a green, slimy growth, which wavered to and fro in the water. It made the bed of the brook so slippery that it was difficult to stand in it; and both my companion and I got several thorough drenchings while trying to drag the canoe over difficult places. At the farthest point reached the cliffs, there about 400 feet high, approached very close together; and a huge mass of rock had fallen in, and finding the opening too narrow to permit it to descend was lodged about sixty feet up, forming an arch or natural bridge under which it was possible to pass. Just beyond the bed of the stream was almost completely blocked with fallen masses of rocks, about which the water rushed furiously, and further progress was impossible. Other side streams examined were of much the same character, though generally the cliffs were not so high as those frowning over the Colorado itself.

The country around the Colorado is a desert. The soil is sandy, but there is rock at no great depth. Here and there are tufts of an herb that one must call grass. I would give a trifle to see an English farmer's face if a truss of this "grass" were offered to him as hay. It is as coarse, dry, and sapless as dead twigs, but there is great nutriment in it for certain classes of animals, and mules seek it eagerly and thrive on it. There are other kinds of herbage, all growing scantily and in isolated tufts, and all with the same sun-dried, dead appearance. The growth appears to be slow. I tried the experiment of watering some of these desert herbs. The effect of a few quarts of river water thrown over a weed six or seven inches high was to cause it to spring up to over *three feet in nine days*. So that I imagine that a few inches more of annual rain would turn this desert into a flourishing country. The herb in question resembled a wayside weed in England known to country people in my part of the country (Leicestershire) as "bird's-eye." It bears a small blue flower like the forget-me-not. The effect

of water on the dry grass was not so marked, but was marvellous enough. It doubled its height and bulk in the same period, and caused it to assume a strong and upward growth. I noticed that the roots of all herbage not only penetrated deeply into the soil, but spread much laterally, evidently to obtain as great a share as possible of the scant moisture with which this region is favoured.

Now and then in my journey through the great cañon of the Colorado we came to spots where the cliffs were so worn away that they left a space of a hundred yards or two of tolerably smooth, sloping ground, over which one could walk with ease. Such spots usually had a few herbs growing on them, sometimes forming a clump. The same kind of bush grew on the plains and in the valley. In the cañons, where it was sheltered and obtained moisture, it often arrived at the dignity of a small tree; on the plains it was a mere shrub, only occasionally reaching more than two or three feet in height. The seeds of the bushes and plants must blow over the edges of the cliffs, and there are abundant crevices where they must lodge, but either there is not soil enough to enable them to spring into life or the roots fail to maintain a hold of the rocks, for nowhere did I see a bush growing up amongst the rocks of the cliff. Down the cañon, where bushes had rooted, they were green and vigorous; up on the plains they were dingy and dry like the rest of the vegetation.

Though in the cañons there were great quantities of broken rocks and stones, indicating frequent considerable falls from the cliffs, I never actually saw the smallest stone drop. Yet the fall must have been tremendous in quantity from remote ages. When, then, do the masses give way, and under what circumstance? There are never any heavy rains to loosen the rocks, and they are too well sheltered in the ravines to be affected much by the violent wind tornadoes that sometimes rush across these

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desolate regions. I am quite at a loss to imagine what influence could have been at work to cause these large falls. The undermining of the river is, no doubt, the chief agency in forming both the valleys and the cañons, but I very much doubt if it is the sole cause.

Turning to the natural history of this district, I have not much of importance to write of. I have already mentioned that a single pair of the Californian condor was seen. I also saw a solitary flock of sage hens on the plains, numbering about twenty birds. This was at a spot nearly twenty miles away from the river. I obtained one shot at them, and one only, though I followed the birds for a long distance, for they proved remarkably wild. Keeping within the limit of about ten miles from the river, I saw scarcely any birds at all; indeed I do not remember following the course of any other American river where, in the same distance and time, I met with such a paucity of the feathered race. No waterfowl at all, not even a duck, were seen on the Colorado or any of its tributaries. Probably the want of sedge and convenient breeding-places kept them away. A few small flocks of a little finch were seen in the valley, the same bird having previously been seen in Nevada and California, and a few swallows were nesting in parts of the Colorado rocks, hundreds of feet above the water. I never got within shot of these swallows on account of the difficulty of the ground, nor could their holes be reached. Outside the line of the valley cliffs one or two hawks were seen of species common to all the Western States which I visited on this journey. In the valley, as well as on the plains outside its limit, there were quails and a species of partridge, called a scaly-partridge by my companion (the mule driver) on account of the scaly pattern formed by a black network on a light-grey ground on all the under parts of the birds. These, with a species of thrush and three finches, were the only birds we met with within the immediate neighbourhood of the Colorado.

I lament that my ignorance should have prevented my naming many birds, animals, and plants referred to in this part of the work. I confess, indeed, that it was, in some cases, only after the completion of my journey that I identified some of those described by means of the skins, &c., which I secured. I was unfortunate, on more than one occasion, in losing by accident collections which might have been valuable. The greatest loss of this nature occurred when my waggon was burnt on my way to Carson. I would also say that I appear to have assigned many fresh localities to some species of American birds. That is the opinion of some American naturalists with whom I had conversation at this time. I am rather surprised to find that the birds of the eastern side of the continent are still but imperfectly tabulated and described, and the habits of many of them quite unknown. It is probable that these Western States would yield a rich crop of new species to the scientific naturalist who could afford the time to search for them.

Birds are my favourite study, but of other creatures found on the Colorado I may mention two small lizards, both seen in the lower ranges of Californian mountains, and a small land tortoise less than three inches across the shell. The latter was probably a new or rare species, for two or three which I took back to Frisco were eagerly sought by local naturalists, who had never seen any like them before. They were found near a soda (alkaline) pool, but not in the water, thirty miles from the river. Actually in the Colorado desert a small greenish-grey snake was seen in scanty numbers. It was only eight or nine inches long and very active, taking refuge in cracks and holes in the ground as soon as approached. Travelling eastward, when we got among bushes two or three species of common snake were found, and also rattlesnakes, the first time I had seen that venomous reptile on this side of the Rockies.

Insects were by no means abundant in the desert region

or near the Colorado. Coleoptera seemed to be the most abundant, but few that I saw were remarkable for either colour or shape. Some were brilliant green, and one was coppery and bright with a yellow sheen, but from a collection made in this region which was afterwards shown to me, it would seem that I did not find some of the most beautiful kinds. On the plains, where there was a fair sprinkling of grass and weeds, there were crickets and a large brown grasshopper, and at night their incessant chirping showed that their numbers must be great. Occasionally, but not often enough to give the usual trouble, we found a few mosquitoes ready to take a gratuitous feed, and there was also a long-bodied, black fly that stung very sharply. A mason bee, and a few small flies like saw-flies in shape, together with several species of ants, exhausts the list of insects noticed by me in this region.

I was more than once astonished at finding snails in positions and places where I should have thought it impossible for such creatures to exist. Moisture is certainly not a requisite of life for some kinds of snails, for I found them in the most arid parts of the Colorado Desert. The largest kind, with a shell as big as a billiard ball, was often seen in clusters in crevices of rocks, and their tracks of dried slime could be traced for many yards over the hard ground. The habits of this species were nocturnal, as, indeed, seemed those of all the desert snails, and I think they fed on a wiry, dry kind of grass which grows sparsely even in these desolate plains. Wherever there were bushes we were almost sure to find snails sheltering under them. Empty shells were sometimes found lying hundreds in a heap.

Our oft-noticed friends the spiders were in full force and activity in these regions. I did not notice any web-spinning species in the deserts, but the under parts of some of the bushes were literally enveloped with old and dirty webs from which spiders fell, feigning death, when

disturbed. A small centipede was the only other arachnid noticed.

Of mammals bats were the most abundant, and I observed at least seven species or varieties. The largest was seen to alight on rocks, and crawl over them with considerable activity. Specimens of this bat procured by me weighed from twelve to sixteen ounces. Its most remarkable features were its large rounded ears, wide mouth, and strong, pointed teeth. It was not seen nearer to the Colorado than some twenty-five or thirty miles, and at Frisco I was told that a similar species had been taken near the town. It was not abundant in Colorado. One of the other species I saw in great numbers at Salt Lake, and most of the others had been seen in other parts of the West.

Next to bats, mice are the most numerous mammals in this region. I made out five distinct species, besides several which I considered to be mere varieties of kinds I had seen elsewhere. The largest of these was as big as a small rat, and may have been a rat for aught I know; for I confess that I do not know where the mouse ends and the rat begins. The distinction is merely one of size, and where you have five or six animals differing but *one size* from each other it is impossible to fix that distinction. These Colorado mice are very abundant in certain localities. Though I never saw any actually in the river cañon, they harboured in the rocks close to it. The habits of all were very different from those of our house mice, for they ran about the rocks and plains quite boldly, with no attempt at concealment until the near approach of danger warned them that it was time to attempt escape. In this they were not very successful, for often, having no holes or similar lurking-places, they had no resort when hard pressed except springing and jumping, and were easily run down and captured. The large kind was rather fierce, and bit sharply. Their lurking-places were under stones and

rocks. None burrowed into the ground, and they were often seen in great numbers on open parts of the plain where there was no shelter for them. I noticed a curious habit of some of the smallest of jumping straight up a height of a foot or eighteen inches.

I ought, perhaps, to have given the first place on the list to the prairie-dog or marmot; but it was a local animal in those parts of Colorado I visited during this journey, though very abundant where found. I have already described the habits of this animal, and need not add much more to what I have already written. Here the little owl, usually associating with it on the other side of the Rocky Mountains, and in South America, was not noticed, neither were there any snakes usurping in their holes. It is certain, therefore, that both these creatures are intruders on the marmot in the districts where found.

On my way back to Frisco I again visited portions of the Sierra Nevada, and met with a ludicrous bear adventure. One evening I was wandering among some rugged rocks in search of quail, and went further than I intended—two miles or more from my waggon. On my right hand were rocks too steep to climb, on the left a precipice a hundred feet deep. Just as I turned an angular rock I came face to face with a grizzly, and not more than twelve paces from him. He was evidently as much taken aback as I was, and immediately sat up on his haunches, staring at me with a most comical expression. I dare say I looked comical too; at least I felt most unenviably. My gun was only loaded with small shot, and was therefore of scarcely more use than a pepper-box. Both I and the bear remained perfectly motionless—perhaps for two minutes, perhaps for five. It seemed an hour to me. Then he suddenly turned tail and shuffled away with such ungraceful haste that at any other time I should have been amused; now I was simply thankful. When he had gone about a hundred yards he

stopped and looked back, to see if I were following, I suppose. Finding I was not, he resumed his retreat as fast as before, while I showed equal celerity in rejoining my companion. When I told him what had happened, he drily remarked, "Ah! as soon as I seed yer, I thought ye'd had a mortal fright. You look it!" Not a kind remark; so I remained silent, as I felt now rather inclined to be angry. No man likes to feel that he has been obliged to retreat from a foe that evidently feared him.

On this return journey I met with an animal that I had not previously seen in the Sierra. In a shallow mountain stream, which, however, was running with a brisk current, I came upon a family of Californian mountain beaver, which differs much from the ordinary beaver and is a different colour. The mountain beaver is an animal about the size of a rabbit, grey in colour, with a shorter and rounder head than the common beaver. It does not build dams like the latter animal, but lives in holes in the banks of the streams it frequents. It is a more active animal than the common beaver, and is almost as dexterous in using its forepaws as hands as a monkey. I have seen them sitting up with a root or piece of branch, gnawing the bark off and turning the stick about as nimbly as possible. They are partially nocturnal in their habits, and very wily, so that I never succeeded in capturing one except by trap or shooting. All attempts to dig them out failed because they have more than one entrance to their burrows. Indeed, they seemed to me to be able to go from burrow to burrow by cross passages, so that I could never tell what holes to stop. If I stopped all I could find in one place, still they escaped, and the only way to take them was by placing a trap at the entrance of their holes.

CHAPTER XII

CONCLUSION

I HAD intended to record my travels in other parts of the States, in Canada, and above all in Mexico, but space forbids. Yet I cannot close this book without giving my countrymen a caution to avoid Mexico. It is a land in which Englishmen are abhorred, and in which they can never obtain justice. I was brutally ill-treated, robbed, and imprisoned there without the slightest cause—from mere jealousy and dislike of my nation—and only rescued from prolonged misery by the intervention of American friends. Not that the Mexicans love a Yankee better than an Englishman, but they fear him, and know that his country will protect him; while on the other hand, there is no other country in the world in which the British consul is so loth to interfere for the protection of his fellow-countrymen. This appears to arise from the excessive fear of the British Government of having complications with Mexico for fear that should lead to uneasiness on the part of the United States Government, who have been ticklish of foreign intervention ever since the French occupation. Whether I am right in my surmise or not I can roundly assert that, if an Englishman gets into difficulties with the insolent and dishonest Mexican authorities, he may just as well appeal to the Chinese gods as to his consul. The latter will confine himself to lukewarm protests, which the Mexicans will utterly disregard; and redress is out of the question. I took 14,000 dollars' worth of goods among them, and did not bring from the accursed country the value of half as

many hundreds. My goods were seized under the pretence that I was attempting to evade the customs dues, and otherwise breaking the laws; and what was not forfeited was wantonly destroyed, while I was kept in a filthy prison and daily insulted. My valuable collections were taken from me and, as I afterwards heard, sold for a great price; and when I was being thrust from the country one of my best mules was stabbed up the body by a fiend, in pure spite. Without exception, Mexico is the most ignorant, cruel, and unjust country I have ever been in, and I may add with truth, the most cowardly and immoral. Unfortunately I never took up my American citizenship, or matters would have had a different issue. As it was I never received a penny compensation for the outrages I endured. I warn all Englishmen to keep clear of Mexico.

It is a grand country, too, and a beautiful, and abounds with objects of interest to the naturalist and traveller. My notes of a three months' sojourn in the country would be sufficient of themselves to form a small volume; but I have not space to add another chapter to this work, which could not be a short one.

APPENDIX

NOTE A.—It seems that there are both caimans and crocodiles in North and South America. The varieties mentioned in the text are those noticed in both divisions of the continent, but one circumstance that militates against the value of my estimate of the number of species was the difficulty of judging accurately when a caiman was full-grown, and it is possible that they alter considerably with age.

NOTE B.—It could not be a basilisk, I am told ; for the range of the basilisk does not extend further north than Southern Mexico. It is suggested by a gentleman who was good enough to read the proofs for me that it might be an iguana. No specimen of the creature was preserved, and as it is nearly thirty years since my observations were made, I cannot now undertake to improve my description of it. It is clear from my note-books that I was satisfied at the time that it was a basilisk.

NOTE C.—I am wrong here, it seems. There is no mystery about the matter at all ; and naturalists *now* admit that flies *do* die off at the end of summer. This shows that my observations were right, and that naturalists sometimes find it necessary to change their opinions ; for down to a very recent date some gentlemen of high standing in the scientific world were not aware of the fact here mentioned. I do not know, however, that all I have written about the house-fly is accepted in learned circles.

NOTE D.—My attention has been called to this spider, and it seems to be doubtful if it is a harvest-spider. I am using popular names here, and for the reason given in Note B., viz., the lapse of thirty years or more since my observations were made, I cannot now enter into a discussion of what it really was. It appeared to me to be, and probably was, what I call it, a harvest-spider. A friend tells me that no American spider answering my description is known to science. All I can say is that when I state that I have seen and observed a creature, the reader may rely upon it that I have done my best to give a correct description of it.

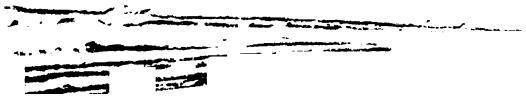
The “142 kinds of spiders” referred to on page 106 is probably an error. I was not aware at the time of making the state-

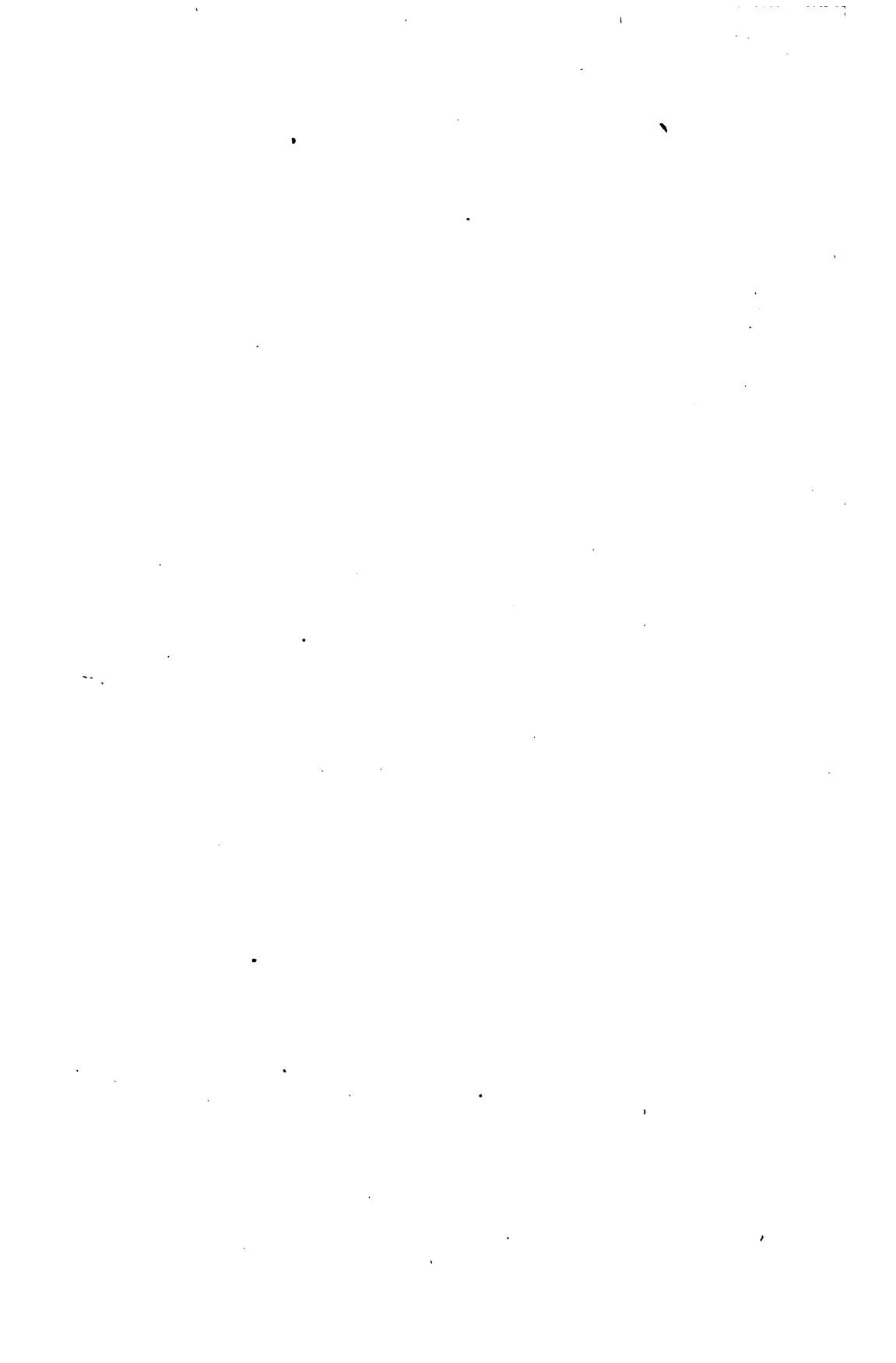
ment that the males and females of spiders differed so much in appearance; and it is certain that, in some cases at least, I have reckoned the sexes as different species.

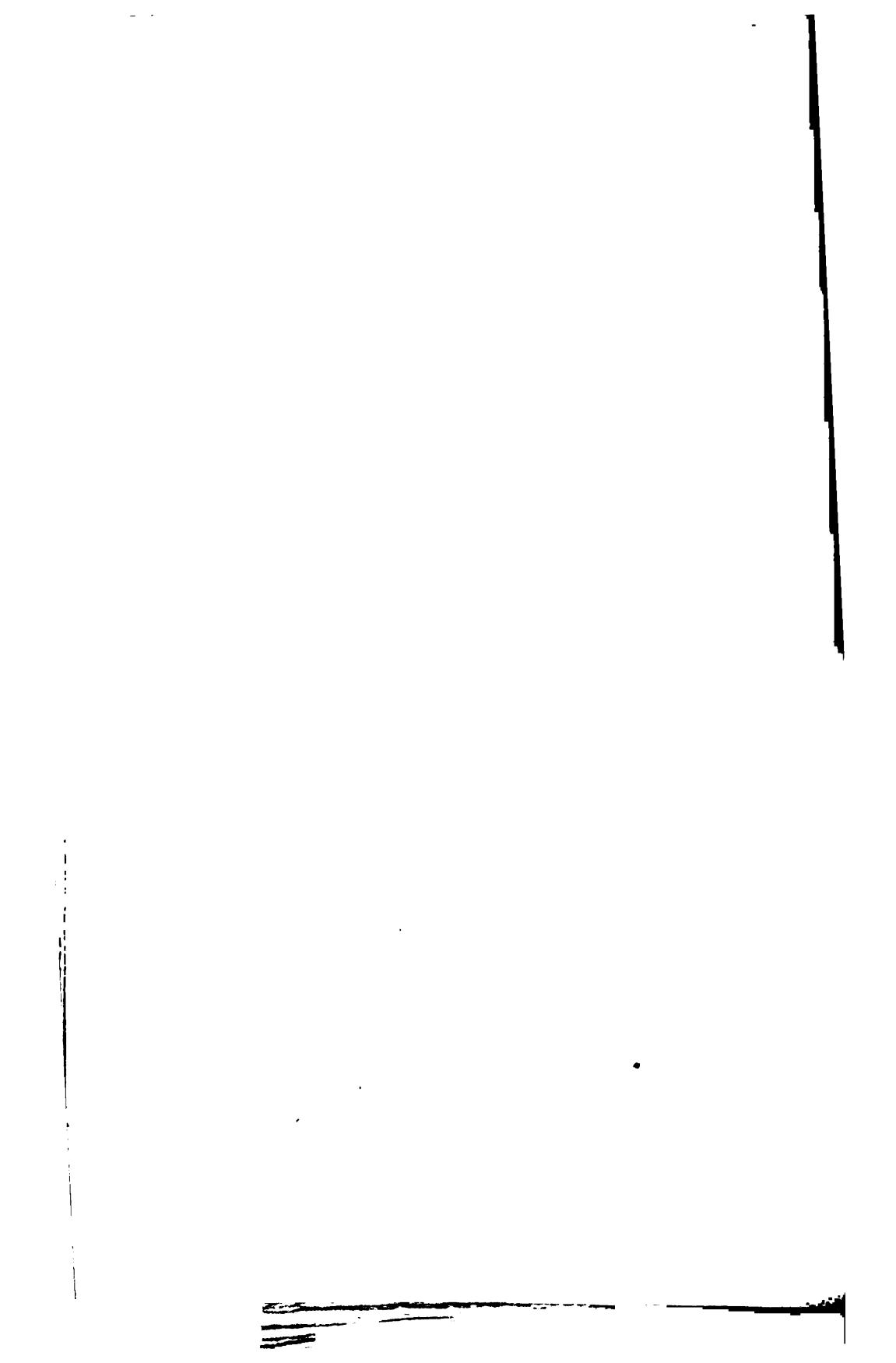
NOTE E.—This lizard is the *Heloderma Suspectum* of naturalists, and is also called the Gila Monster. Specimens were handled freely by our party until the accident mentioned in the text occurred; and I do not think the lizard would bite unless provoked. If teased it is very vicious. There is no other instance within my knowledge of this lizard biting man, and I do not know, therefore, to what degree of danger to compare its poison. It is fatal to small animals very quickly in most cases, but not always. It would probably be fatal to weakly human beings if prompt remedial measures were not taken.

NOTE F.—I have the misfortune to be wrong here again, it seems. The agave does not flower once only and then die. And it is found far south of the tropics in America. Being rather pressed for time I did not stop to learn how often it really does flower, but I think it is safe to say that that event does not take place very often. Certainly the impression which I have formed from my acquaintance with the plant is that the whole family flowers very irregularly.

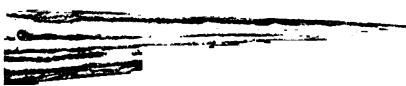
NOTE G.—An impression prevails, both in America and England, that the Californian condor is only found in the mountains of the Pacific sea-board. This is a mistake. I have seen odd pairs more than a thousand miles inland; but I cannot say that they breed far from the coast, where they are most abundant. It is possible that these condors take excursions of a thousand miles or more into the country, and perform the journey in a few hours, for they are birds of very powerful flight.

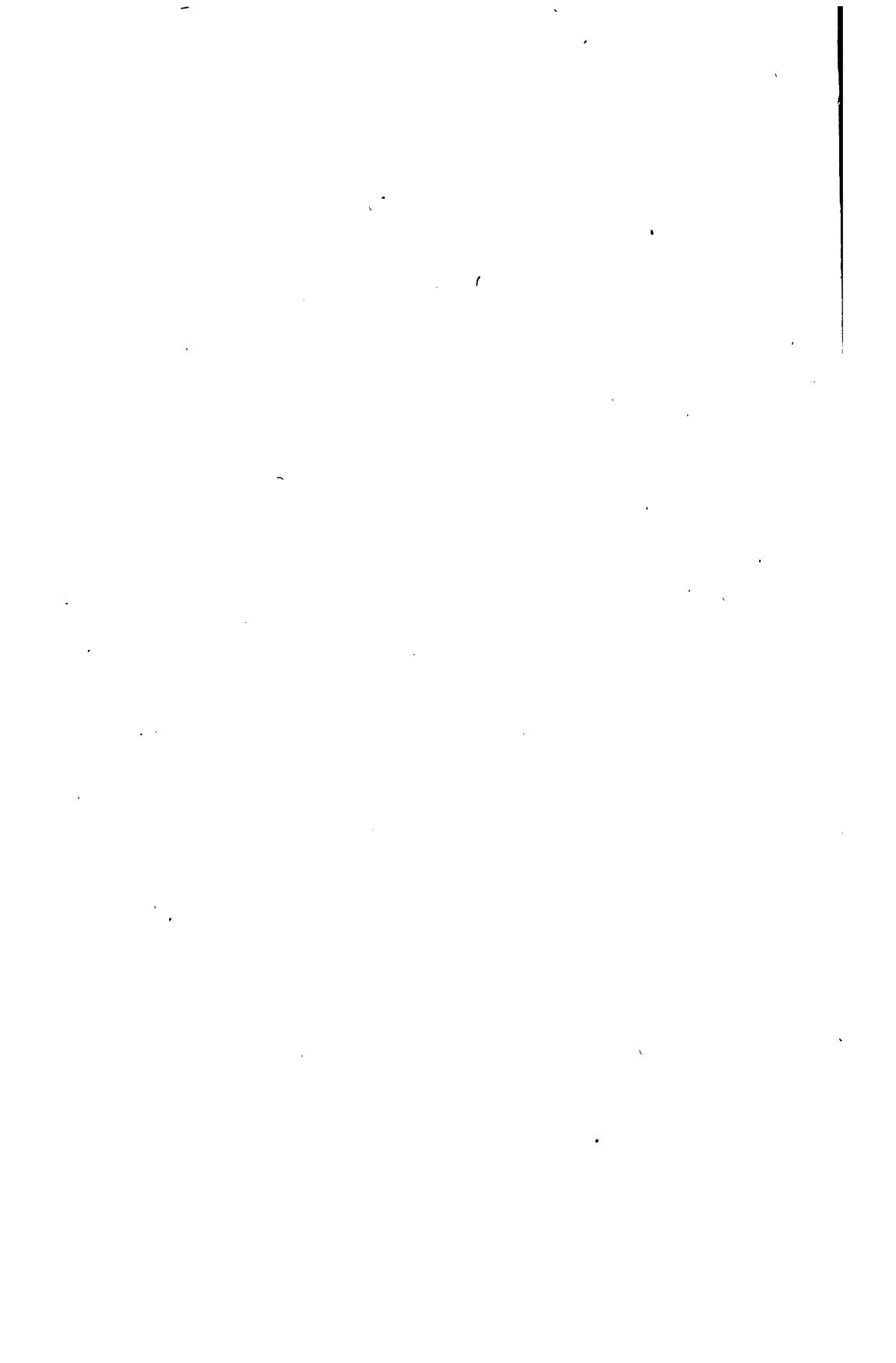


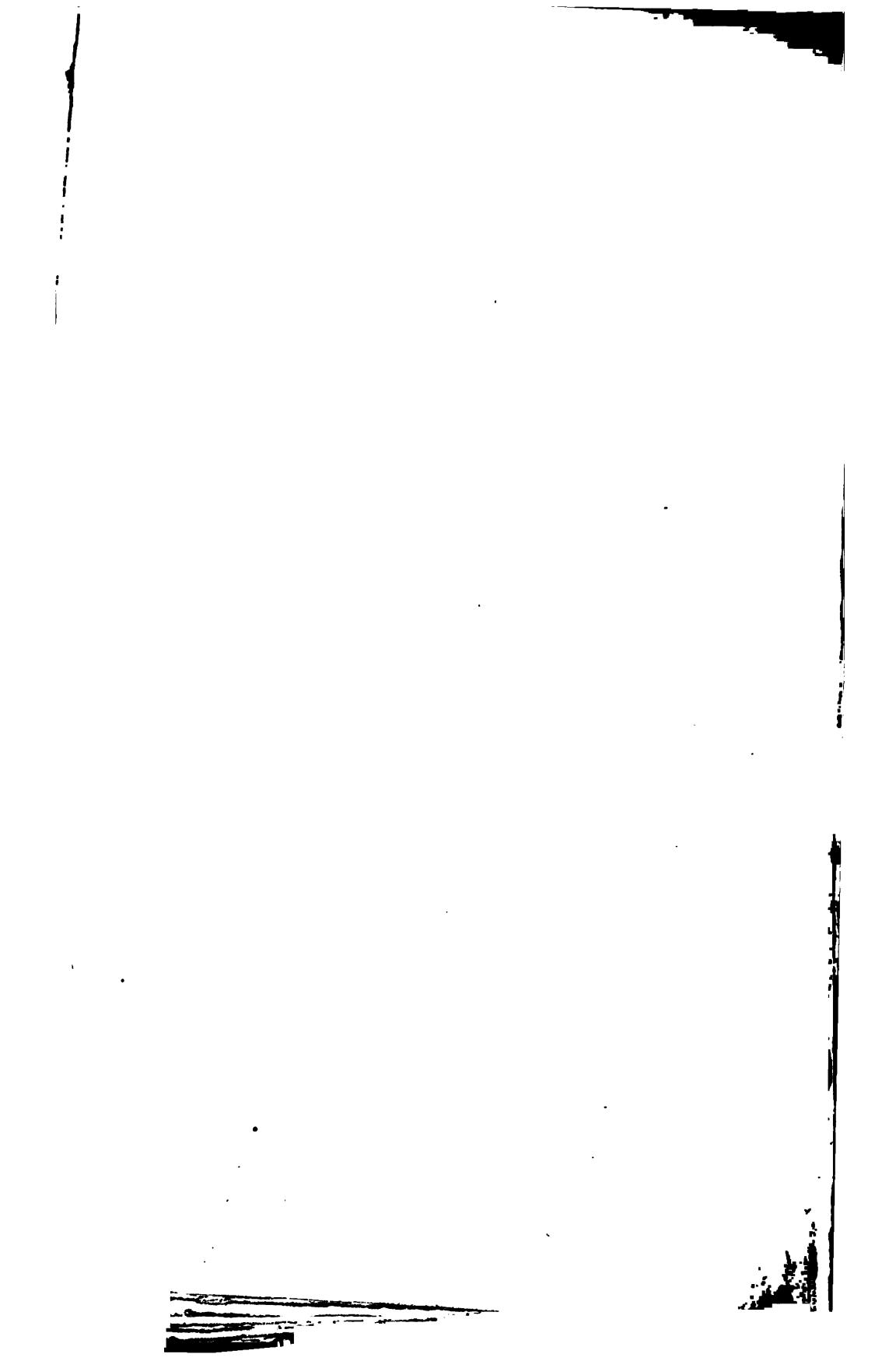












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